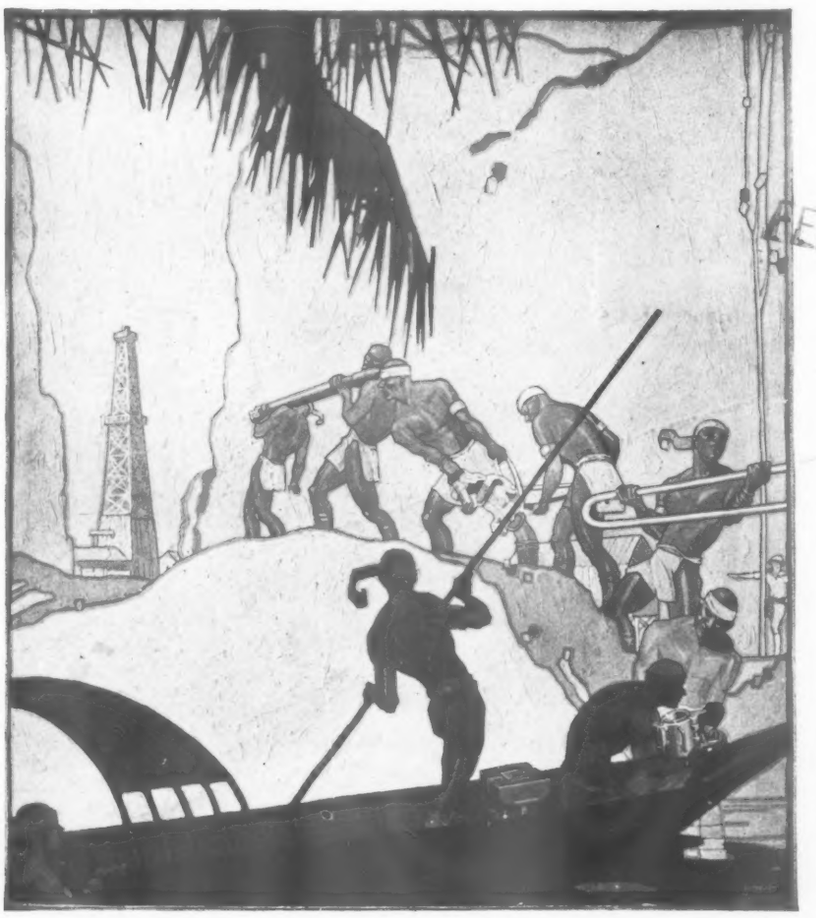
The OIL WEEKLY

10¢ A COPY

Exclusively Devoted To The Production and Transportation of Oil and Gas

March 2, 1928 **Volume 48. No. 11**

IT'S A WILSON



—in *every* oil field, without exception.

Wilson
Center Latch Elevator

Wilson Products for sale by your Supply Companies

Sales Representatives:
Tulsa, Oklahoma,
489 Atlas Life Bldg.

Houston, Texas
219 Post-Dispatch Bldg.

Wilson Oil Tools Corp.
DISTRIBUTORS FOR
Wilson & Willard Mfg. Co.
Factory and Distributors Office: It's a Wilson — 2301 East Vernon Ave, Los Angeles, Calif.

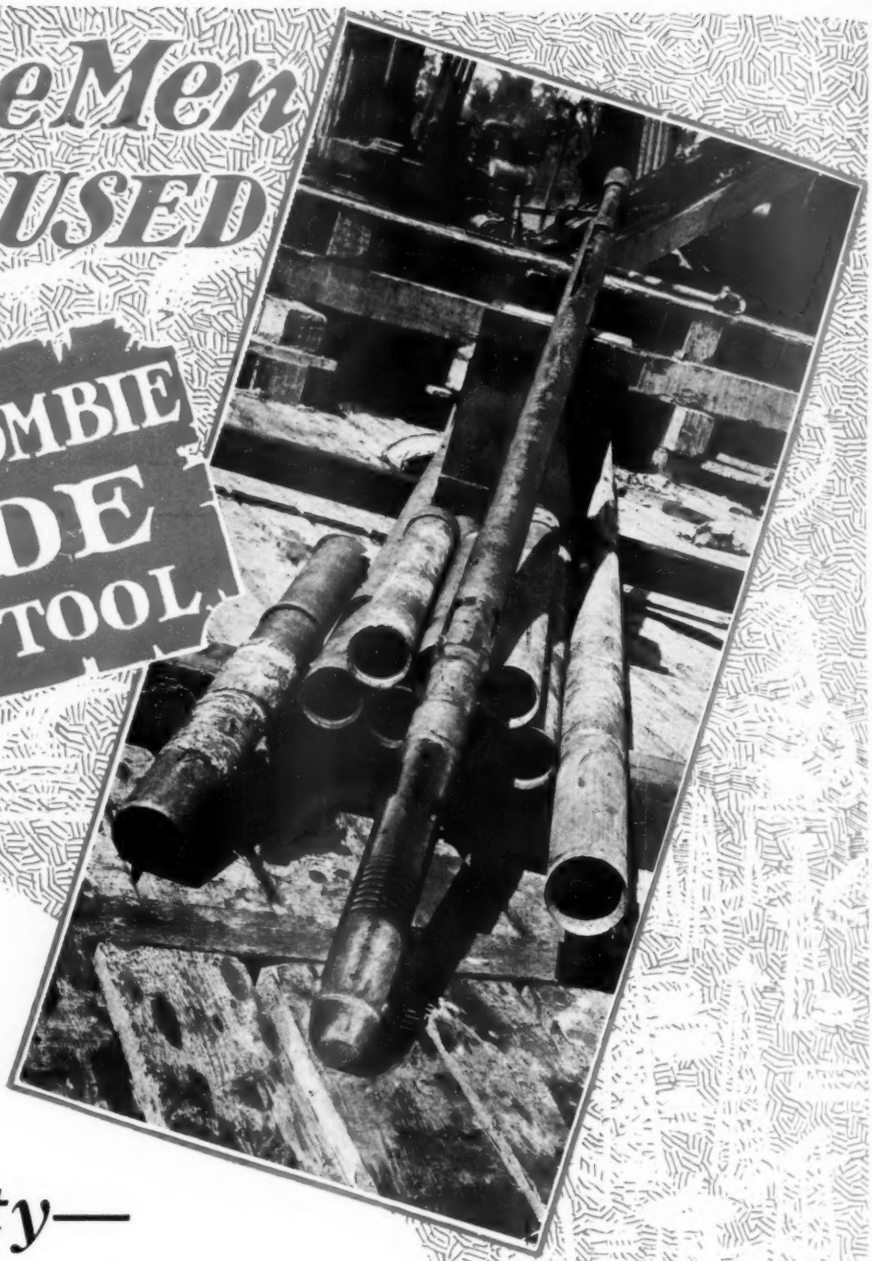
Sales Representatives:
Abilene, Texas
865 Grape St.

Fort Worth, Texas
812 Dan Waggoner Bldg.

HILL MEMORIAL
LOUISIANA STATE UNIVERS
BATON ROUGE, LA.

FEB 29 192

Ask the Men who have USED the J. S. ABERCROMBIE INSIDE CUTTING TOOL



There's No Doubt in Their Minds of Its

Speed— Reliability— Economy!

They have learned from EXPERIENCE that it cuts and removes pipe, liner and screen and leaves the hole CLEAN—so that additional pipe can be set without reducing the size. "Repeat contracts" are unquestionable evidence of its EFFICIENCY.

Made in 3, 4½, 5¾, 6, 6⅝, 7, 8 and 8¼-inch sizes—for ANY Job.

J. S. ABERCROMBIE Co.
616-18 West Bldg. Houston, Texas

The OIL WEEKLY. Issued weekly by the Gulf Publishing Co., 3301 Buffalo Drive, Houston, Texas. Subscription price $1.00 per year; 10 cents per copy. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

PREPAREDNESS

THE Navy is the mobile, the quick moving section of American defense. At the slightest indication of trouble a ship or a fleet is rushed to the scene.

The Portable Pumping Unit is the "navy" of the GASO line. It also is dispatched to the scene at the slightest indication of trouble. Is there a break in the pipe line? The Portable Unit is rushed on its own trailer to take up the burden. Is water service required? The Portable Unit is ready to perform it. Wherever emergency or semi-permanent pumping is required, the Portable Pumping Unit is at hand to furnish it.

The immediate success and growing sales of the Portable Pumping Unit are the best indications of its usefulness.

May we send you further details?

GASO PUMP & BURNER MFG. CO.
Tulsa · Oklahoma

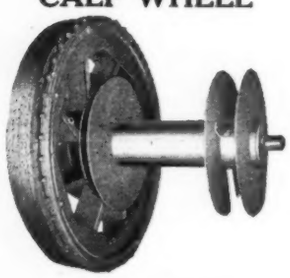
Capacities: 45 to 250 barrels at 80 to 275 pound pressures; fully enclosed and self-lubricating.

GASO PUMPS
for every oil industry need

UNITED
BRADFORD
RIG IRONS & STEEL EQUIPMENT

BULL WHEEL

CALF WHEEL



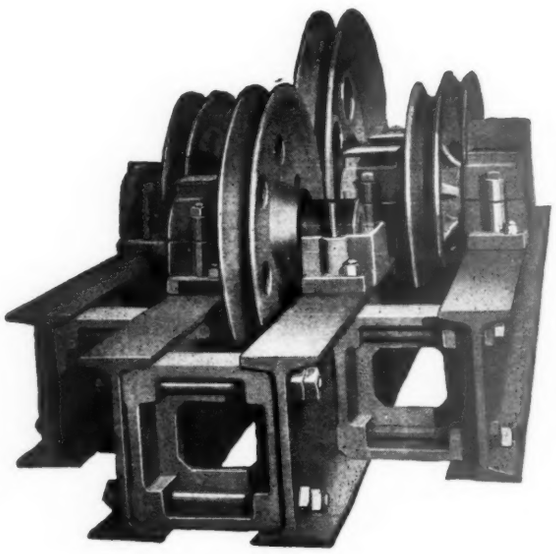
BAND WHEEL

TUG RIM

UNITED
BRADFORD

"UNITED" IRON WORKS INC. FOR SERVICE

CROWN BLOCKS



"United-Bradford" Crown Blocks are manufactured from 12-inch 40.8 lb. "I" beams with metal spacers and metal bearings. They are equipped with one 30" by 5" Crown Pulley, one 24" by 5" Sand Sheave and four 22" by 5" Casing Pulleys. The Casing Pulleys have steel trunnions. The bearings have large oil reservoirs and, if desired, can be furnished with either babbitt or bronze bearing surface.

It is Rig Iron and Steel Equipment Economy to purchase your requirements from "United-Bradford.' A sincere desire to serve plus an established reputation insures you complete satisfaction on your needs.

UNITED IRON WORKS, INC.
General Office:
Kansas City, Mo.

SALES OFFICES: 114 N. ROSEDALE, TULSA, OKLA. MAGNOLIA BLDG., DALLAS, TEXAS

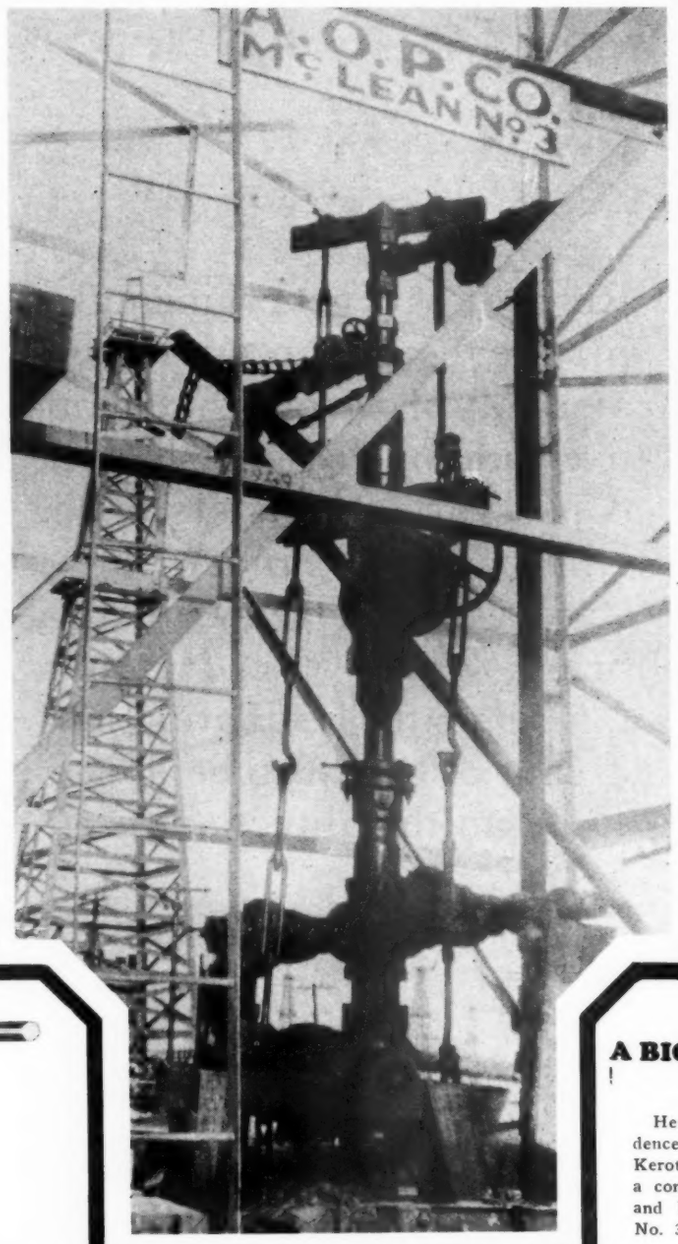
STOCKS MAINTAINED AT THE FOLLOWING POINTS:

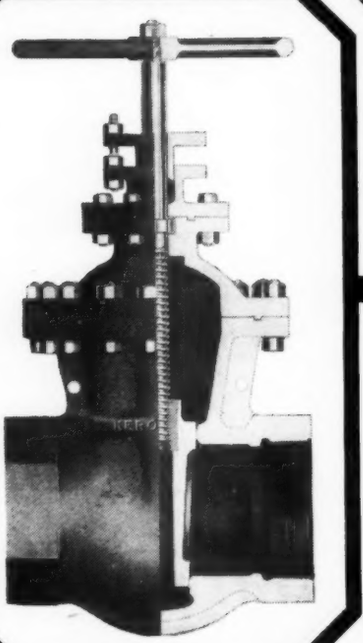
KANSAS	OKLAHOMA	TEXAS
Madison	Covington	Spearman
Eureka	Tulsa	Pampa
Winfield	Okmulgee	Panhandle
Keighley	Seminole	Borger
Hutchinson		Shamrock
	ARKANSAS	Trent
	El Dorado	McCamey
	Smackover	Pyote
		Odessa
		Santa Rita

Manufacturers of RIG IRONS and STEEL EQUIPMENT STEEL TANKS DRILLING MACHINES SWAB BARRELS

Regardless of governmental or private regulation, our national supply of petroleum remains fixed and unchangeable. True conservation consists in the elimination of underground waste. Smackover, Tonkawa, Seminole and other Halliburton-cemented fields are significant of what can be done in this direction.

HALLIBURTON
OIL WELL CEMENTING COMPANY
DUNCAN, OKLAHOMA





A BIG CHRISTMAS TREE FOR TEXAS GUSHER

Here you see the outside evidence of the inside dependability of Kerotest Drilling Valves—showing a complete set of Kerotest Valves and Fittings installed on McLean No. 3.

When you consider the inside construction of a Kerotest as shown below—then you'll realize that Kerotest is truly a masterpiece in drilling valves. Every Kerotest is cast of tough Ilmenite Electric Steel—the steel that has an extremely dense grain structure and a high elastic limit that makes it ideal for high pressure valves.

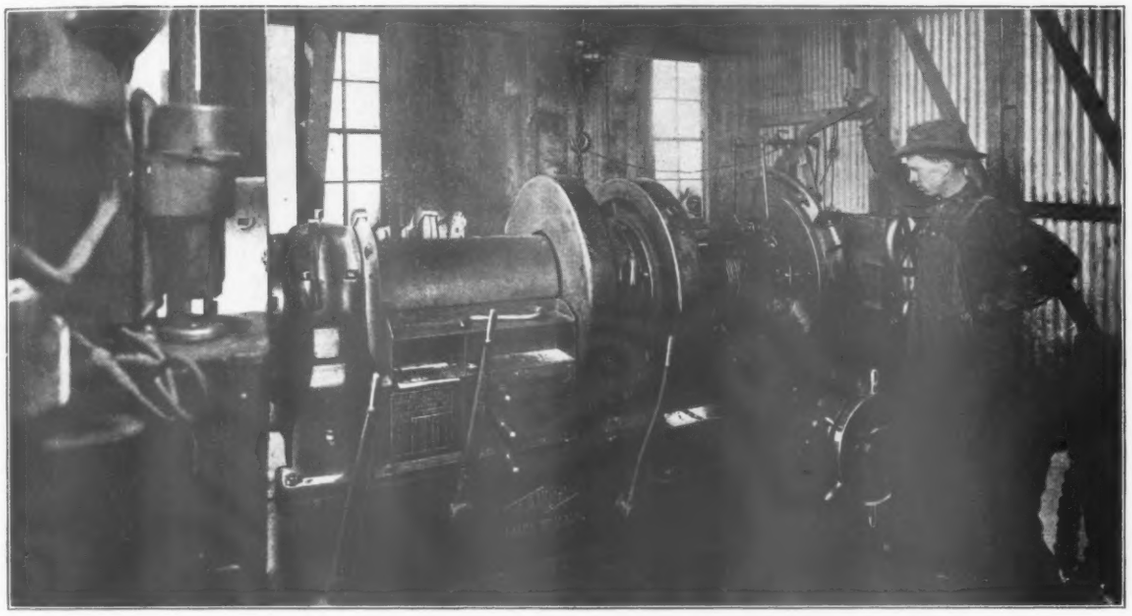
KEROTEST MANUFACTURING CO.
Pittsburgh Penna.

Manufacturers of Drilling Valves, Refinery Valves, Flow Line Valves and Heavy Duty Fittings for oil fields.

KEROTEST

Carried in Stock and Sold by
GRINNELL COMPANY OF THE PACIFIC
Los Angeles San Francisco
NORVELL-WILDER HARDWARE CO.
Houston Beaumont Shreveport Fort Worth
OIL WELL SUPPLY COMPANY
Branch Stores in all Oil Fields
Export Distributors:
OIL WELL SUPPLY COMPANY
Pittsburgh New York Tampico London

Say you saw it in The OIL WEEKLY



Stop the Leaks When You Cut the Threads

Cree & Company, Cross Plains, Texas, cut threads that will not leak. They use the Landis Pipe Threading and Cutting Machine. Their 12" Landis is shown in the photo.

Well-formed threads of correct taper their entire length are leak proof. The Landis chaser is the only thread cutting tool that will cut a full tapered thread at all times. This is because the chaser is ground on the cutting edge and *not* in the throat. Each grinding gives the effect of a new chaser. Therefore full tapered threads when the chaser is new or about worn out.

The variable rake angle means quality threads regardless of the material. Good threads are produced by Landis on new or old steel or iron casing, brass, cast iron and seamless pipe and tubing.

The wide range covered by one set of chasers and the long life (many estimate twenty times that of any other type), insures low threading costs and good net earnings.

The Landis machine, with its universal chucks, cut steel gears, reversing mechanism and many other features is years in advance of others. That's why Landis is now used where good threads and low costs are demanded.

If you do not use LANDIS--Write us

LANDIS MACHINE CO., Inc., Waynesboro, Pa.

Detroit Office: 5928 Second Blvd.

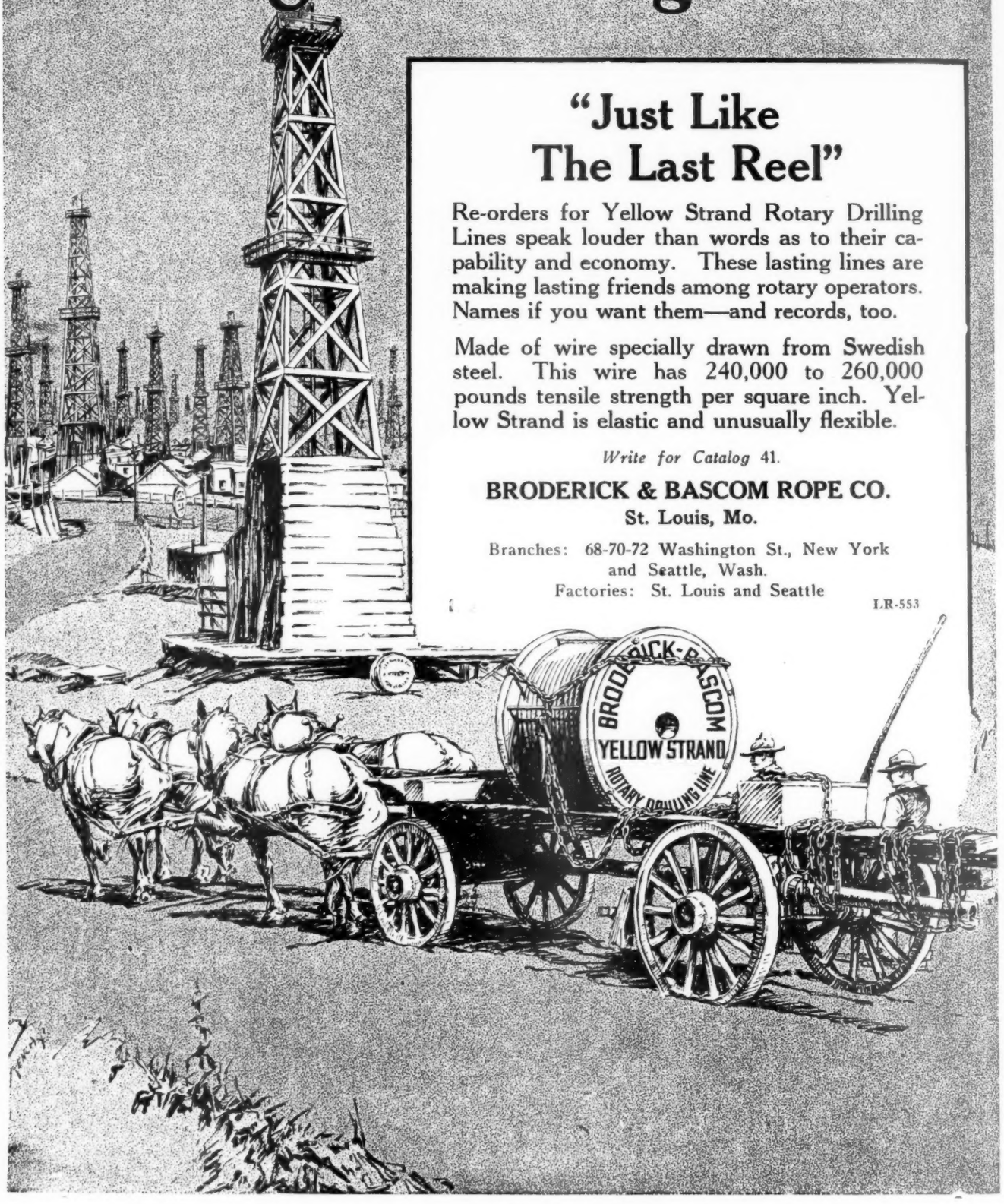
DOMESTIC AGENTS: Marshall & Huschart Machinery Co., Chicago, Ill.; Marshall & Huschart Machinery Co. of Indiana, Indianapolis, Ind.; Colcord-Wright Machinery & Supply So., St. Louis, Mo.; R. B. Whitacre & Co., St. Paul, Minn.; Hamilton Machinery Co., Chattanooga, Tenn.; Young & Vann Supply Co., Birmingham, Ala.; Woodward, Wight & Co., New Orleans, La.; Jos. T. Ryerson & Son, Houston, Texas; Hendrie & Bolthoff Mfg. & Supply Co., Denver, Colo.; Salt Lake Hardware Co., Salt Lake City, Utah; Harry M. Euler Co., Portland, Ore.; Hallidie Machy Co., Seattle, Wash.; Hallidie Co., Spokane, Wash.; Herberts Machinery & Supply Co., San Francisco and Los Angeles, California.

CANADIAN AGENTS: Canadian Fairbanks-Morse Co., Toronto and Montreal.

FOREIGN REPRESENTATIVES: Benson Brothers, Ltd., Sydney; Schuchardt & Schutte, Berlin, Vienna, Prague, Warsaw; R. S. Stokvis & Zonen, Rotterdam, Brussels, Soerabaya; M. Almeida & Cia. San Paulo, Rio de Janerio; Alfred Herberts, Ltd., Coventry, Calcutta, Osaka; Burton Fils, Paris.

Say you saw it in The OIL WEEKLY

Yellow Strand Rotary Drilling Lines



"Just Like The Last Reel"

Re-orders for Yellow Strand Rotary Drilling Lines speak louder than words as to their capability and economy. These lasting lines are making lasting friends among rotary operators. Names if you want them—and records, too.

Made of wire specially drawn from Swedish steel. This wire has 240,000 to 260,000 pounds tensile strength per square inch. Yellow Strand is elastic and unusually flexible.

Write for Catalog 41.

BRODERICK & BASCOM ROPE CO.
St. Louis, Mo.

Branches: 68-70-72 Washington St., New York and Seattle, Wash.
Factories: St. Louis and Seattle

LR-553

ANOTHER MANUFACTURER OF MACHINERY FOR THE OIL INDUSTRY
THAT USES SKF BEARINGS AS STANDARD EQUIPMENT

VIKING PUMP CO.

Long Life Plus Freedom from Trouble Make SKF, the Highest Priced Bearings in the World, a Paying Investment

RELIABILITY—a much-abused word and yet one which best sums up the requirements of the oil industry. Day and night or only occasional demand, equipment must always run with the least attention. It is just such service that SKF Ball Bearings give on these Viking pumps for an Oklahoma oil company.

Operating at high speeds under tough conditions, long-life SKF Ball Bearings run smoothly without the least impairment of their original efficiency. Lubricant is not required except at long intervals. Housings are designed to effectively keep out dirt, grit and water from the bearings.

You men who plan, build, use or pay for machines of any kind, remember this: It costs more to replace a poor bearing than to buy the best one that SKF ever produced. AND SKF ANTI-FRICTION BEARINGS ARE THE HIGHEST PRICED IN THE WORLD.

SKF INDUSTRIES, INC., 40 East 34th Street, New York, N. Y.

1988

Ball Bearings - Roller Bearings

Nothing is apt to cost so much as a bearing that cost so little

SKF

Say you saw it in The OIL WEEKLY

CLARK "VERTICAL"

Semi-Portable Compressors

Designed for Permanent or Field Installations

The CLARK Vertical Semi-Portable Compressor was designed especially to answer the oil operator's need of a powerful, large capacity, yet portable compressor for field air-lift service.

This compressor is ideal for field air-lift. A complete unit on a single base, it is easily transported, can be installed on timbers until the response of the wells has been assured—and if the response is satisfactory is then highly efficient for use in a permanent installation.

A permanent field air-lift plant composed of CLARK Verticals is shown in the photograph above. An added value, however, lies in the fact that it is not necessary to make installations permanent. Set in the open on timbers, CLARK Portable will give surprisingly efficient service over long periods.

The engine is 4-cylinder, vertical, 75 H.P., burning natural gas. Compressor has two vertical cylinders, each 2-stage, and handles 330,000 cu. ft. of air in 24 hours, at 0 pounds intake to 400 pounds discharge. Air or friction starter is optional.

Ask us for exact operating data and other information. Clark Bros. Company, Olean, N. Y. Branch and Warehouse: 125 W. First St., Tulsa. Warehouses at McCamey and Sweetwater, Texas, and Artesia, N. M. California: Smith, Booth, Usher Co., 228 S. Central Ave., Los Angeles and 50 Fremont St., San Francisco.

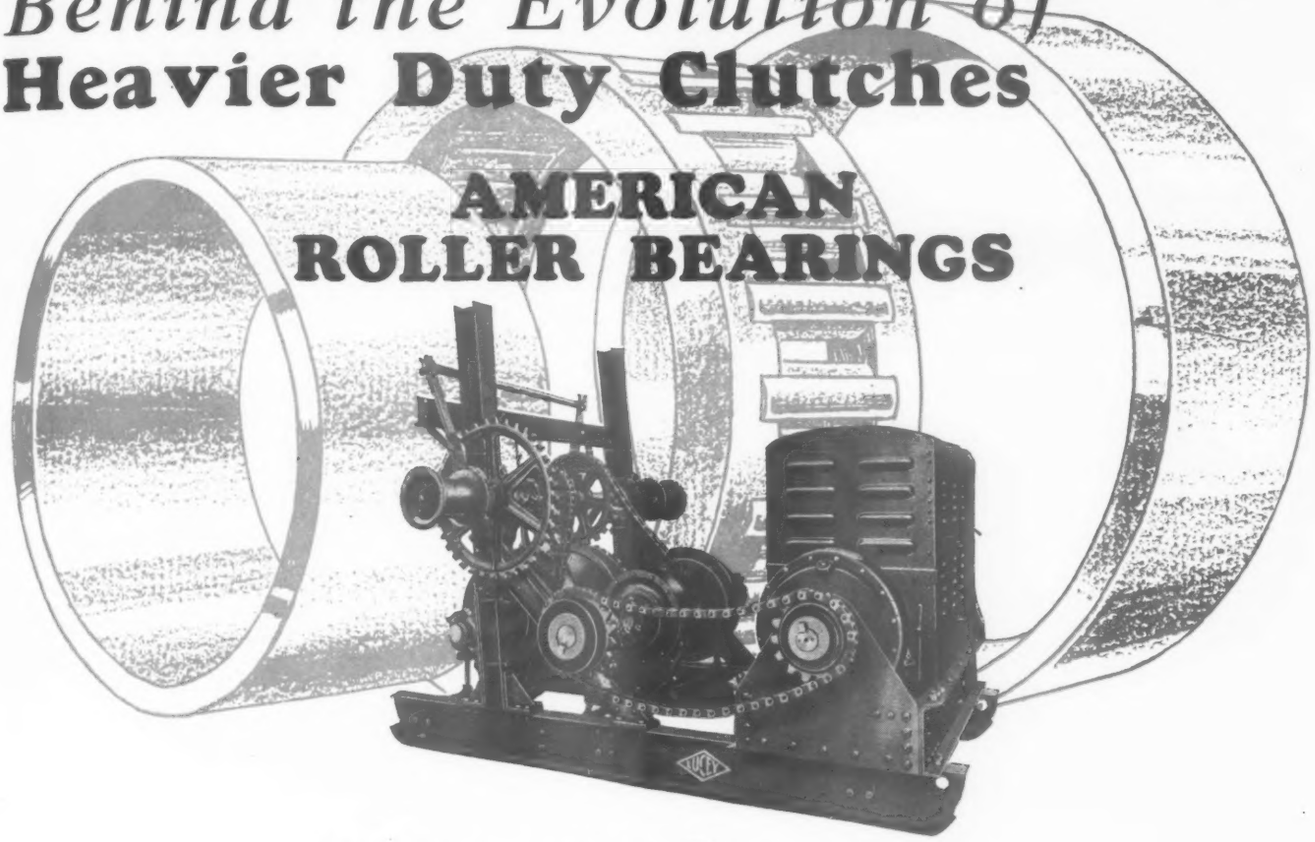
Clark Bros. Co. OLEAN, N. Y.

CLARK

Say you saw it in The OIL WEEKLY

Behind the Evolution of **Heavier Duty Clutches**

AMERICAN ROLLER BEARINGS



LUCEY'S LATEST

The two speed portable Draw Works recently announced by Lucey Manufacturing Corporation of Tennessee has a multiple disc type reverse clutch with three Heavy Duty Type C American Bearings on the main shaft and six American Roller Bearings on the reverse gear.

All gears are machine cut and operate in bath of oil.

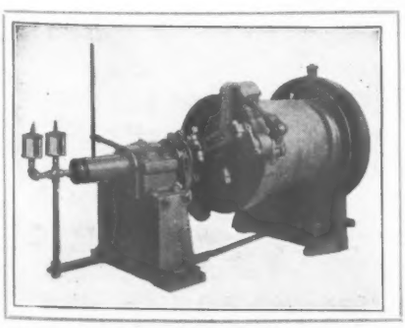
A 100 H. P. gasoline engine is the regular power equipment but other sizes can be furnished if desired. Also adaptable to electric motor or steam engine drive.

The equipment is designed for working at 2500 feet with plenty of strength in reserve to meet any drilling emergency within this depth. It is made to A. P. I. Standards and specifications.

The Lucey Reverse Clutch

On Their New Draw Works

AMERICAN ROLLER BEARING CO.
PITTSBURGH, PENNA.



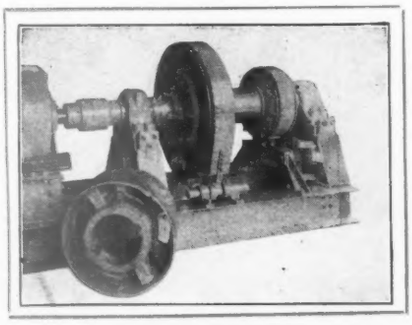
HEAVY DUTY
Reverse Clutch made by Oil Well Supply Co., equipped with American Type "C" Roller Bearings

Three recently and most modernly designed

Reverse Clutches

to be announced to the Oil Field trade have been equipped with Industry's

HEAVY DUTY ROLLER BEARING



HEAVY DUTY
Reverse Clutch made by Portable Rotary Rig Co., equipped with Type "C" American Roller Bearings.

Say you saw it in The OIL WEEKLY

ALLIS-CHALMERS MOTORS

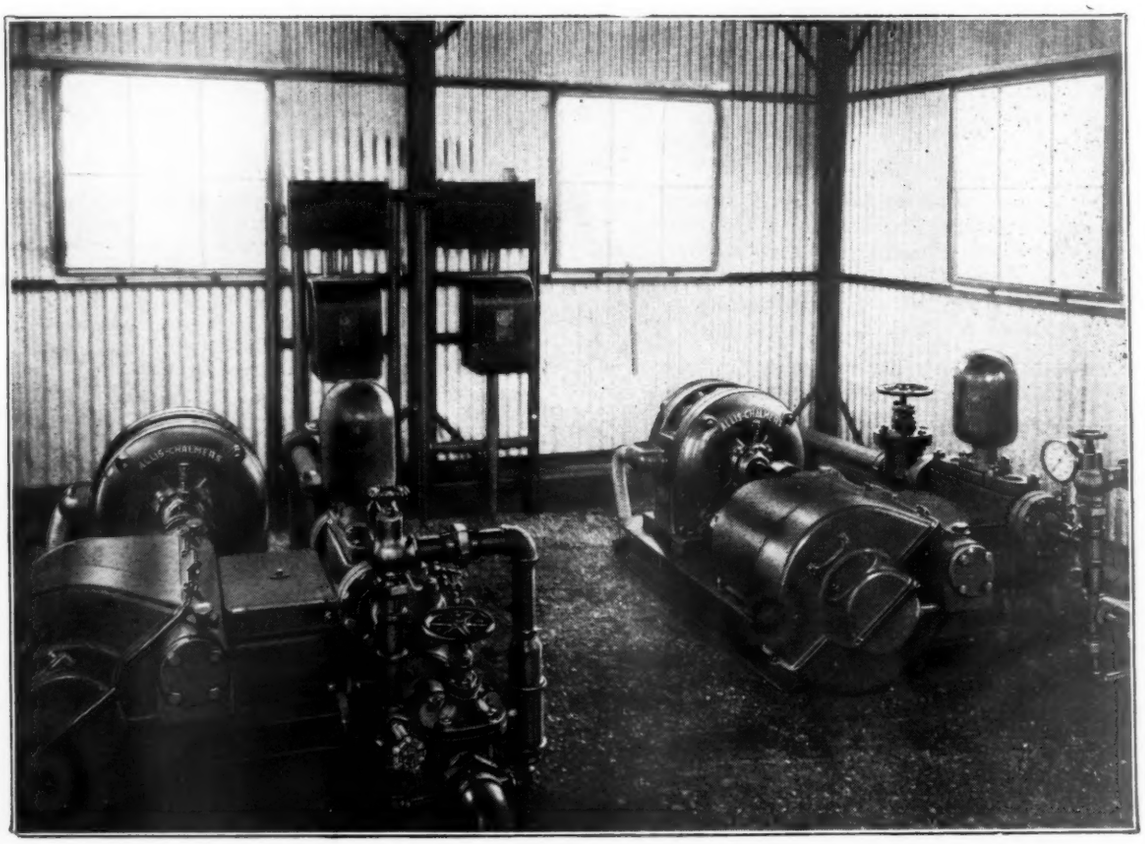
Allis-Chalmers motors are specified for oil field service because they have the stamina that is necessary for continuous operation with the minimum of attention. Each part is designed for maximum strength and protection against shutdown.

Frames of electric furnace cast steel, unit core construction, silver brazed indestructible rotor, extra sealed moisture and acid resisting insulation, and Timken Roller Bearings are assurance of no interruptions.

Oil Field Offices

DALLAS
HOUSTON
KANSAS CITY
NEW ORLEANS
DENVER
LOS ANGELES
SAN FRANCISCO
SAN ANTONIO
EL PASO

WESTERN SUPPLY COMPANY
TULSA, OKLAHOMA



20 H. P., 440 Volt, 685 R.P.M., Allis-Chalmers Motors Direct Connected to Triplex Pumps. Empire Company, Little Rivers, Okla.

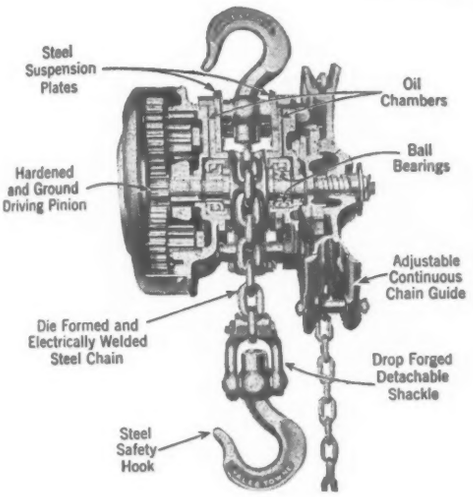
ALLIS-CHALMERS MANUFACTURING CO.

MILWAUKEE. WISCONSIN.

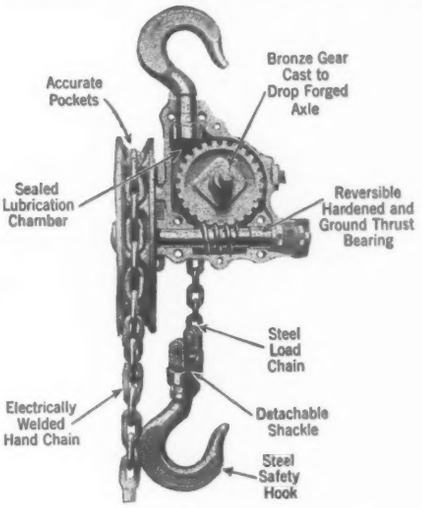
Say you saw it in The OIL WEEKLY

TRADE **YALE** MARK

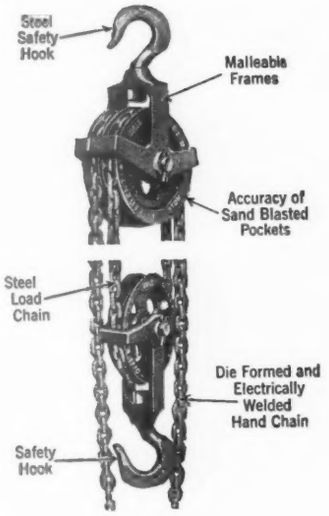
Chain Blocks



YALE
Ball Bearing Spur-Geared Chain Block



YALE
Screw-Geared Chain Block



YALE
Differential Chain Block

Which of these Three Types Does Your Job Need?

YALE Chain Blocks—Ball Bearing Spur-geared, Screw-geared and Differential—answer every chain block requirement. Whatever your particular needs are, one of these three types will save you time, labor and maintenance expense.

Yale Ball Bearing Spur-geared Blocks possess the highest mechanical efficiency. They are the safest, speediest; wear longer and operate with less effort than any other hand hoist made. Capacities from ¼ to 40 tons.

The Yale Screw-geared Blocks are remarkably smooth and even in operation and hold the load under absolute control. Their design and material insure strength and durability with no excess weight to interfere with portability. The load is supported on two chains. Made in capacities from ½ to 5 tons.

Yale Differential Blocks are strong and compact, giving maximum service where light weight and portability are essential, but where economy of effort is not important. They are designed for handling light, occasional loads. Made in capacities from ¼ to 2 tons.

Every part of every Yale Chain Block is made in the Yale Plant.

Our engineers will gladly assist you in selecting the proper equipment to most economically solve your hoisting problems. Write to us today.

YALE MAKES

Yale Ball Bearing Spur-Geared Chain Blocks, Yale Screw-Geared Chain Blocks, Yale Differential Chain Blocks, Yale Roller Bearing Trolleys and Cranes, Electric Chain Hoists, Electric Industrial Trucks.

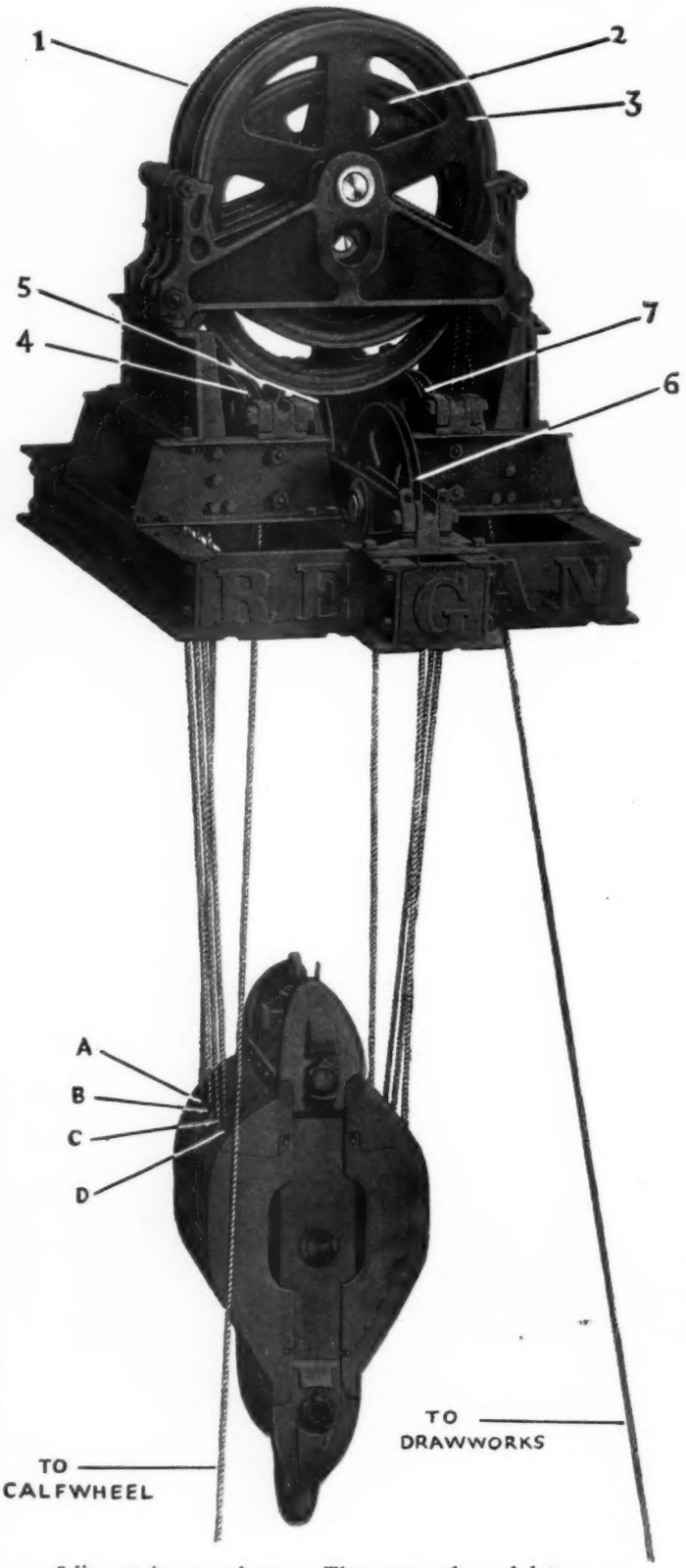
Factory Locking Equipment—To acquire locking control, security and convenience throughout the factory, use Yale Master Keyed Locks.

The Yale & Towne Mfg. Co., Stamford, Conn., U. S. A.
Canadian Branch at St. Catharines, Ont.

YALE **Hoisting and Conveying Systems**

YALE MARKED IS YALE MADE

Feature No. 11

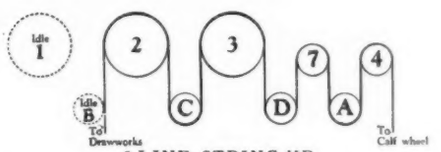


8-line string-up shown. The numerals and letters on illustration correspond with those in drawings of circles. Two extra sheaves (5-6) are used in each string-up. Sheave (6) of the Crown Block is the Sand Line Sheave, while the opposite sheave (5) is the Crown sheave generally used for the Cat Line.

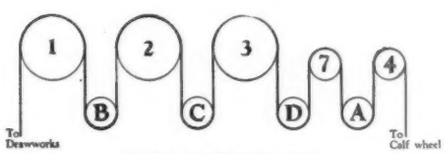
Convertible to 4, 6, 8 and 10 lines

Regan Crown Block

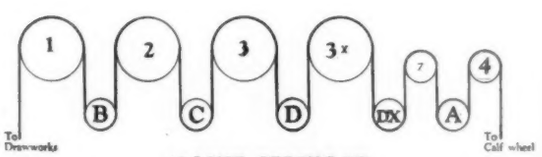
4-LINE STRINGING UP
Stringing 3 Crown Block and 2 Traveling Block Sheaves



6-LINE STRING-UP
Stringing 4 Crown Block and 3 Traveling Block Sheaves



8-LINE STRING-UP
Stringing 5 Crown Block and 4 Traveling Block Sheaves



10-LINE STRING-UP
Stringing 6 Crown Block and 5 Traveling Block Sheaves

When a 5-sheave Traveling Block is used, permitting of a 10-line string-up, another large Casing Sheave (3X) can be installed on either side of the top assembly of the Crown Block and the same relative procedure of stringing-up is followed, as noted above.

Regan Forge & Engineering Co.
San Pedro California

Houston, Texas
1521 Post-Dispatch Bldg.

Oklahoma City, Okla.
531 W. Main St.

Pampa, Texas
Odessa, Texas

New York City
75 West St.
Wm. Braat, Manager

Maracaibo, Venezuela
Wm. Adams,
c-o Amer. Consul

MAKING GOOD IN THE FIELD MAKES FRIENDS FOR WHEELING!

Wheeling Inspection is thorough. The accuracy of threads on pipe and couplings is systematically checked against working gauges. Each individual threaded end and each coupling is checked and verified with a gauge. No expense has been spared to insure a high standard of perfection for all products.

Inspection Keeps Pace with Production

"From Mine to Market"

WHEELING practice is to give as much attention to the inspection of its products as to their manufacture.

This policy produces results in the field such as this,—1,494,240 feet of Wheeling (LaBelle) Line Pipe used by one company in 12 months, every foot, every joint 100% satisfactory.

Examples of this kind, multiplied many times, are reasons why drillers favor Wheeling Casing, Tubing, Drive and Line Pipe today more than ever before. Let Wheeling pipe get down to business for you.

WHEELING STEEL CORPORATION, WHEELING, WEST VA

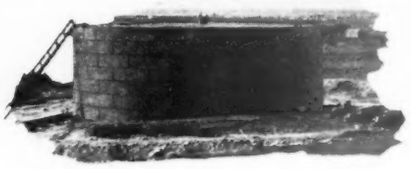
WHEELING STEEL

WHEELING

CASING · TUBING · LINE PIPE

Easy Steps to Evaporation Savings

These views show the same roof in three stages of operation.



The three steps in the operation of a Wiggins Breather Roof

1. Temperature at minimum for the day. Roof supported on framing. Note the slight downward curve at the edge.

2. Temperature rising. Roof practically flat, coming up through the center position as the vapor expands and lifts it off of the framing.

3. Temperature at the day's maximum. Roof slightly domed up accommodating increased vapor. The vapor supports the roof in this position.

A simple principle

The Wiggins Breather Roof eliminates evaporation losses on standing storage in a surprisingly simple and trouble-proof manner. It operates on the axiomatic principle that if no vapor escapes from the tank no evaporation can take place. Changes in temperature produce a change either in volume or pressure of vapor. In a tank of fixed volume the pressure would become excessive. So the Wiggins Breather Roof provides a tank of varying volume. This is accomplished by so designing the steel roof that it can flex freely like a diaphragm between its upper and lower extreme positions.

The result

This variation in volume is more than ample to accommodate the change in volume of vapor with outages such as are ordinarily carried on standing storage tanks. For greater outages some vapor is lost in each breathing cycle because the Breather operates to its full capacity and then vents the balance of the vapor expansion out of the tank. We have an interesting tabulation regarding the evaporation losses and savings with this type of roof. This tabulation brings out the unexpected fact that the savings are even greater when the tank is only partially full than when entirely filled. If you are interested in seeing how this is worked out we shall be pleased to send you a copy of the tabulation.

The Wiggins Breather Roof is thoroughly protected against emergencies. A volume relief valve opens when the roof reaches its maximum upper position and a vacuum relief valve operates at the extreme low position. These valves prevent damage to a roof during filling and emptying and for extreme temperature changes such as occur occasionally in big seasonal movements.

For all conditions

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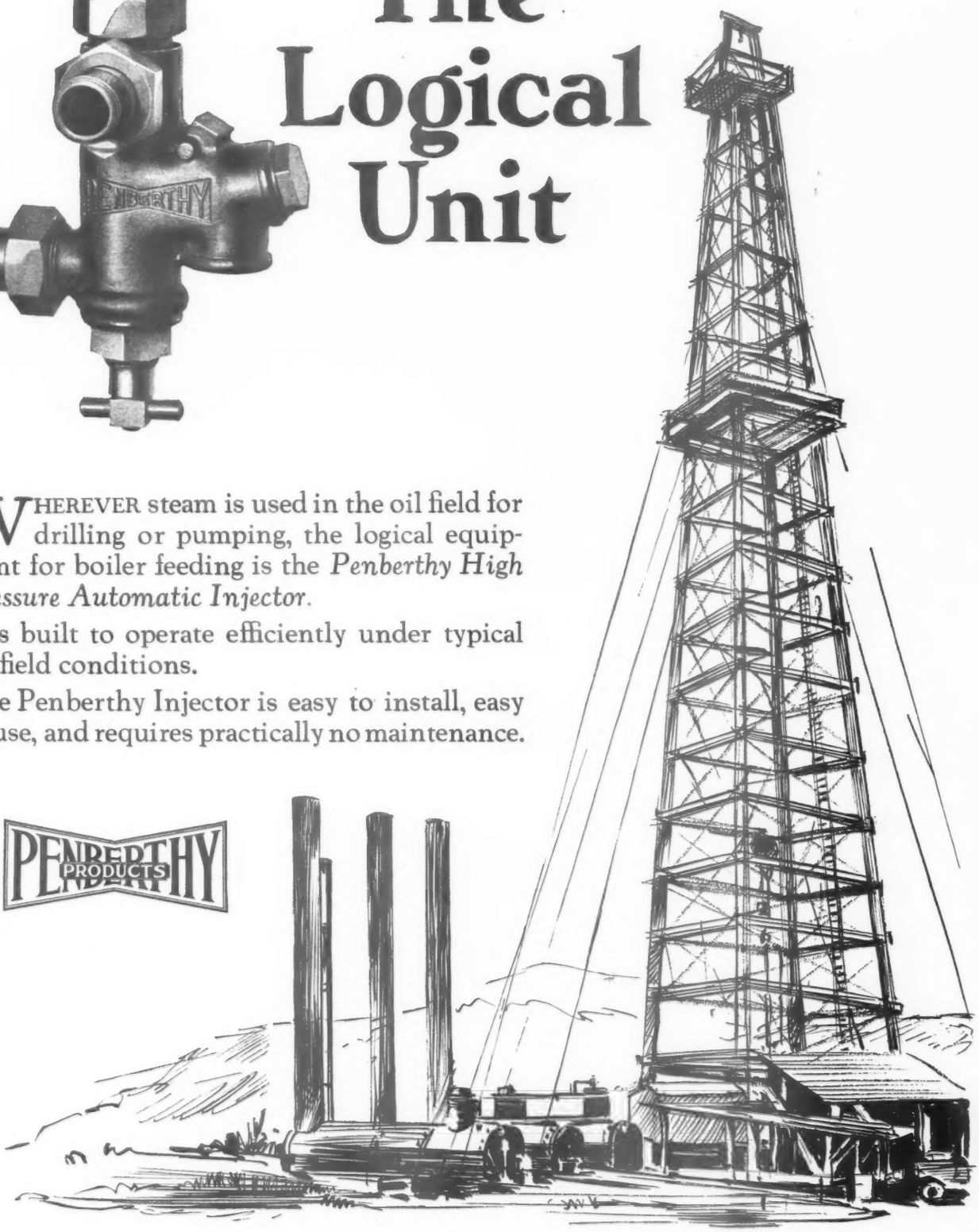

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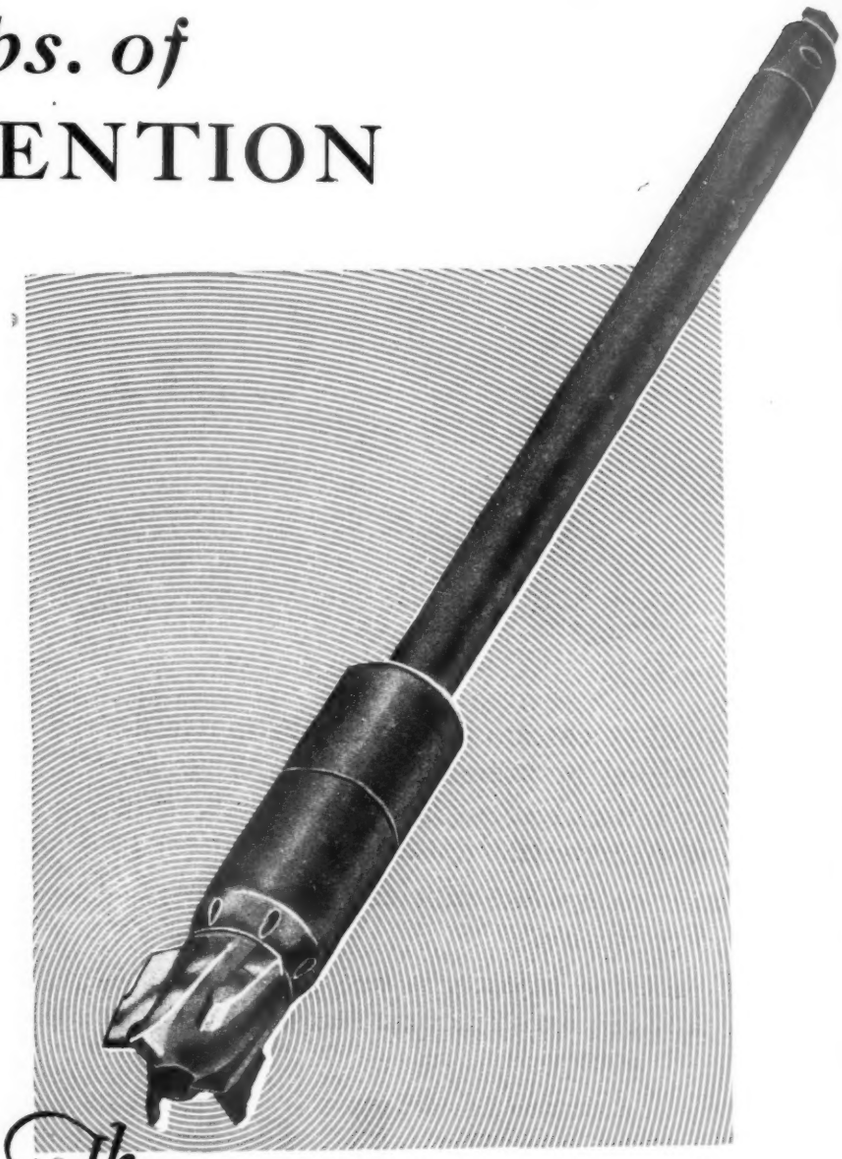

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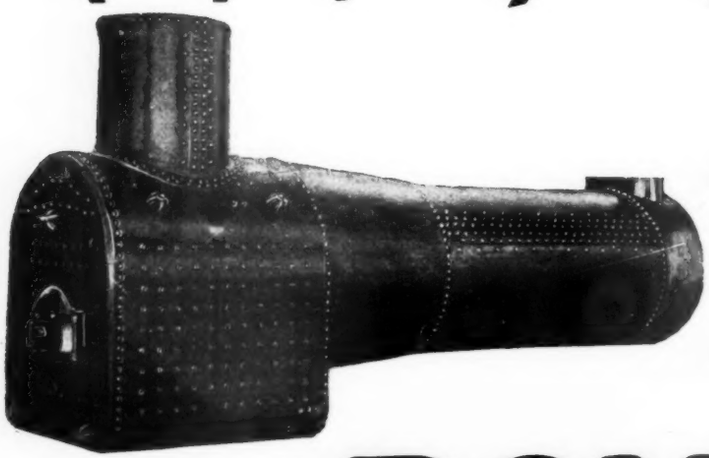

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Volume 48, No. 11 March 2, 1928

The OIL WEEKLY

Edited Weekly at Houston, Texas SPENCER W. ROBINSON, Editor

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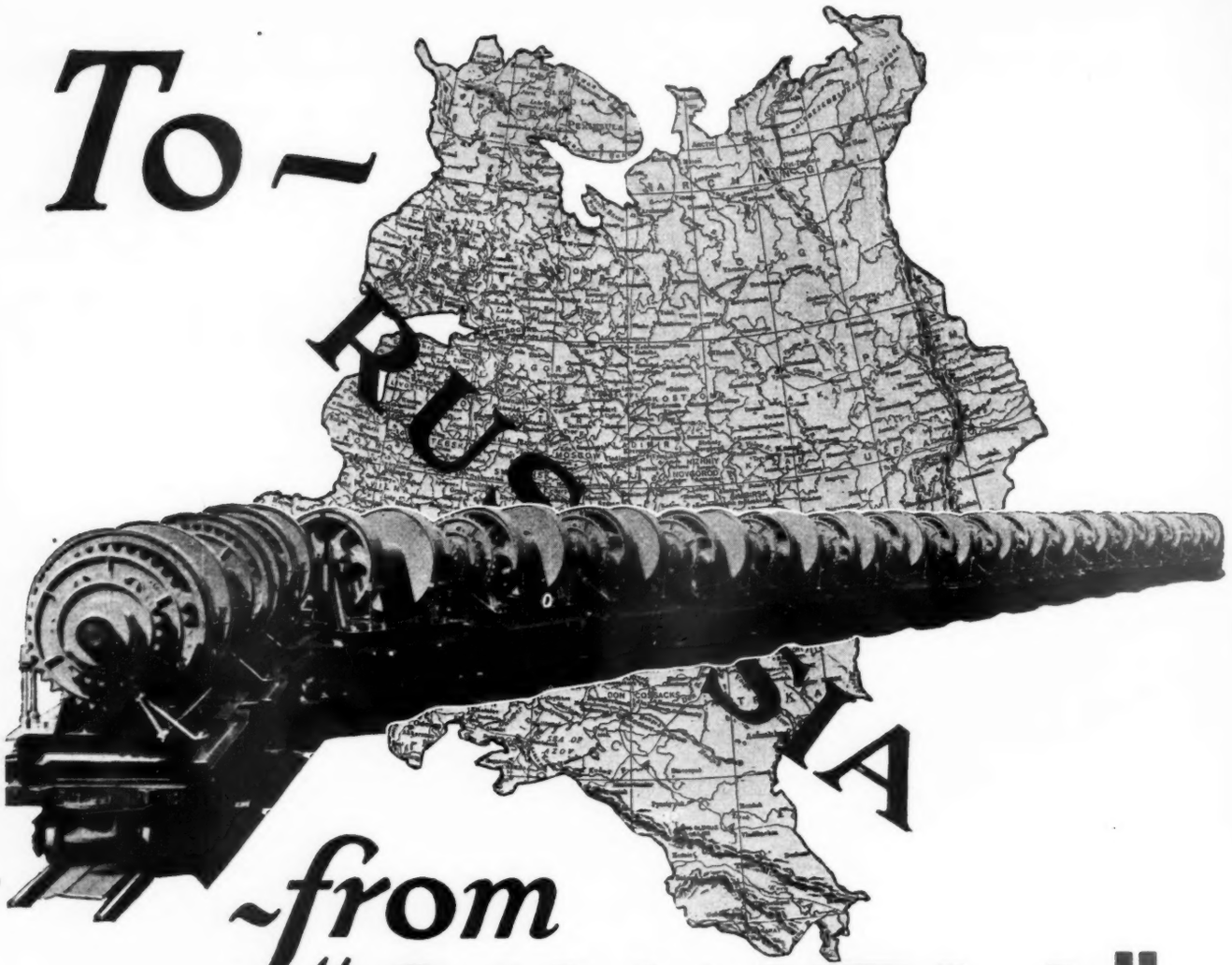
To—



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Summer Should Bring Better Prices For High Gravity Crude

Isolated advances of gasoline tank wagon prices show trend of strengthening refinery market; West Texas is threat

By KENT RIDLEY

THE readjustment of crude prices made early last week throughout the Mid-Continent district revives prospects of more substantial increases being posted on the better grades of crude as the early summer demand for gasoline approaches. Gasoline marketing companies have already started paving the way by announcing advances on tank wagon prices at scattered points over the Middle West and South, and this move is supported by a firm gasoline market in the Mid-Continent refining centers.

Producers of low gravity crudes in the Mid-Continent were the victims of the price readjustment and apparently must wait for the passing of the flush production in the Hendrick field, West Texas district, where distressed priced crude is offered to buyers in large quantities for tank car movement at a flat price over the balance of the present year. Other West Texas fields are a threat to the heavy oil market, but due to a shutdown agreement and isolation from railroads and pipe lines they are not marketing oil below the posted price of 60 cents per barrel at the well.

The Hendrick field has held first position among the individual fields in the country for the past two weeks, and maintained a daily average flow of 135,645 barrels from 77 wells last week. This big production was reached before a direct pipe line connection reached the field, although Humble made its first runs via a new eight-inch line as the week closed. Small producers in the Hendrick field are now endeavoring to locate new buyers after having filled the requirements of a number of Louisiana and Texas plants over the balance of the year with tank car deliveries. This 28-30 gravity crude is available in any quantity desired for tank car movement at a flat price of 60 cents per barrel loaded in buyers' cars, and lower prices can be expected as the daily output reaches new levels.

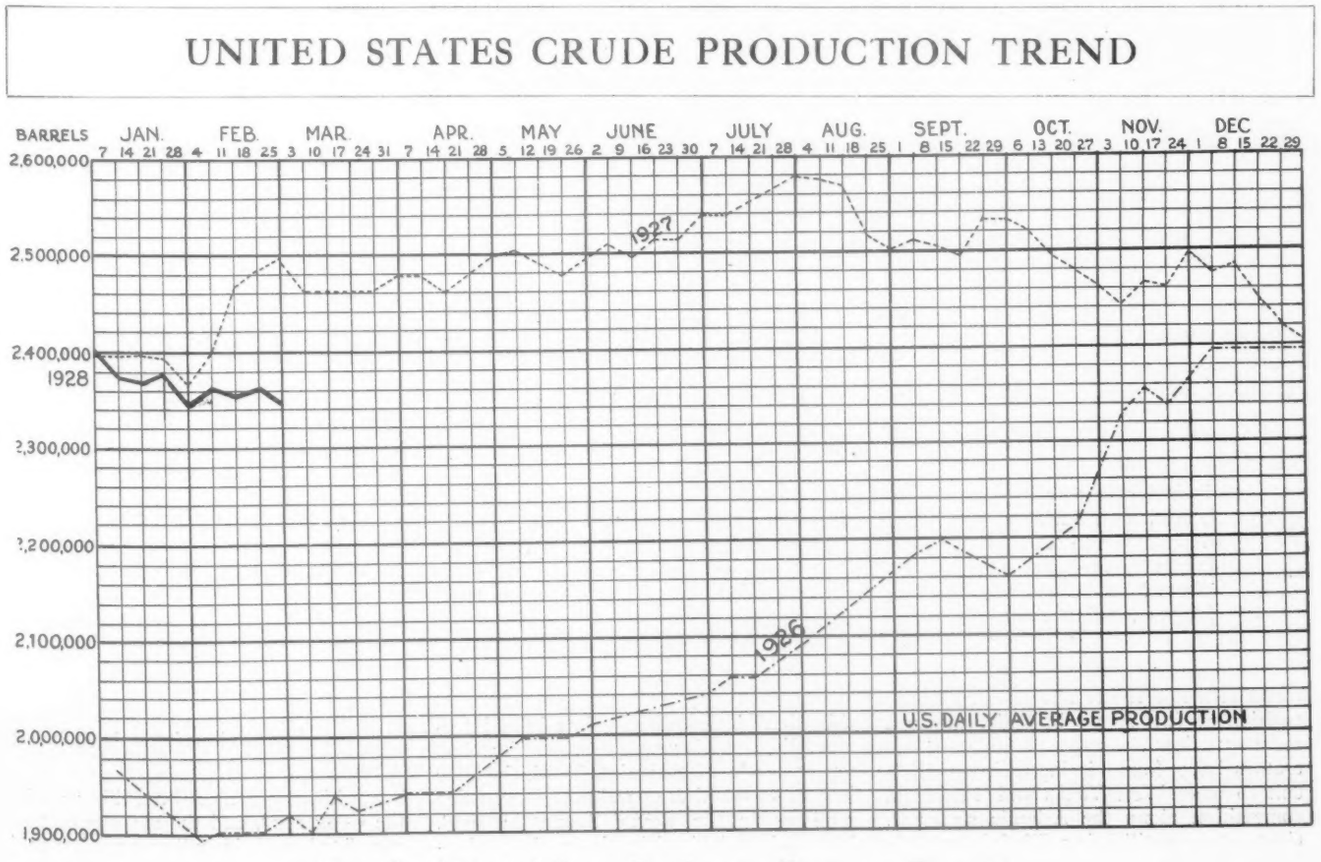
Production Decline

With decreases in daily average output from all but three States this week, production dropped 14,150 barrels daily. The total daily average was 2,349,150 barrels, as compared with 2,363,300 barrels a week ago.

Oklahoma showed the heaviest decrease with a total of 9400 barrels below last week's daily average. California was next and showed 3400 barrels less daily recovery. Texas, outside the Gulf Coast, came third, showing a decline in daily yield amounting to 1400 barrels. Eastern States slumped an even 1000 barrels; Arkansas lost 500 barrels and North Louisiana figures were below those of last week by 450 barrels.

Gains totaling 2000 barrels were shared by the Gulf Coast, Kansas and Rocky Mountain States, distributed as follows: Texas and Louisiana Gulf Coast, 1050 barrels; Kansas, 750 barrels, and Rocky Mountain States, 200 barrels.

Individual fields with heaviest declines included Earlsboro, in Oklahoma, and



Details of United States Production Estimates, Page 66

DETAILS ON CRITICAL FIELDS

Pool—	Oil Wells Completed	Total Initial Production	Initial Per Well	No. Producing Wells	Daily Production Barrels	Daily Production Per Well	Rigs Up	Wells Drilling
TEXAS PANHANDLE—								
Hutchinson County	1,094	544,620	498	973	47,300	49	5	15
Gray County	196	82,125	419	183	19,310	105	5	63
Carson County	177	58,695	332	147	6,985	48	2	5
Wheeler County	42	14,230	339	35	915	26	2	10
Totals	1,509	699,670	464	1,338	74,510	56	14	93
WEST TEXAS—								
Hendrick	77	270,455	3,512	88	135,645	1,524*	14	101
Church & Fields	181	201,110	1,111	177	62,360	352	2	2
Gulf-McElroy	58	51,605	889	58	17,635	304	..	1
Yates	163	1,046,710	6,422	165	49,170	298*	9	21
Totals	479	1,569,880	3,277	488	264,810	543	25	125
OKLAHOMA—								
Seminole	1,263	1,558,000	1,232	1,083	306,994	283	21	65

*Production partially pinched.

Long Beach and Huntington Beach, in California.

Better Future

The revision of crude oil prices made by Carter Oil Company, February 21, is taken over the Mid-Continent generally to indicate a better future. One example of its better future is a move taken by The Texas Company a few days later to raise the tank wagon price of gasoline two cents per gallon to 12 cents in Tulsa. The general feeling among producers is that they have seen the bottom, and that a gradual comeback is probable provided production shows no erratic comebacks within the near future.

The revision of price schedules fails to mean much in dollars and cents in the Mid-Continent when all grades are considered. While lighter oils have been helped, the bulk of which is in the Seminole fields, Tonkawa and Burbank, where producers will reap the gain. But more producers are represented in the losing class, whose production is coming from the shallow Bartlesville and other sands yielding 30 to 33 gravity. These producers are being penalized by virtue of overproduction of lower grades in West Texas, and are thus destined to suffer from low prices in the future to a greater extent than owners of higher gravity crude of 40 degrees and above, due to the difference of the amount of both qualities in sight.

If Seminole's decline continues at anything like near its present rate on into the summer months, chances for still further strengthening of lighter oils appear good.

Several factors, some of which are largely theoretical, are affecting the California oil situation to a marked extent. Several bright spots have appeared, but some of these have been offset by questionable factors which are expected to affect the market over a period.

The extension of Eastern fuel oil contracts at a low figure has placed the disposition of fuel stocks in California in a more questionable stage. California operators have found it increasingly difficult to meet West Texas and Venezuela competition along the Atlantic seaboard. Contracts are still being filled from California, but the much greater distance will have an important bearing upon their renewal. California is seeking additional outlets for its surplus fuel oil.

The conservation movement is gaining headway, and it is believed that the market will be greatly strengthened if the shut-in program is even partially carried out. By shutting in upward of 100,000 barrels, the impending flood from Long Beach would at least be offset.

The latest report of the Pacific Coast office of the American Petroleum Institute shows that more than 1,000,000 barrels of oil went into storage during January, having been the first month in almost a year that both light and heavy oil increased. Light oil stocks have been decreasing steadily, having considerably more than offset the failure to move heavy stocks at a satisfactory figure.

The Long Beach field, which has been a disturbing factor for several months, is slow in upsetting the situation. Completions were expected to bring the field total to at least 140,000 barrels by March 1, but production is far below that figure. With a large number of wells drilling below 5000 feet, a spurt is expected soon.

It now appears that the new fields discovered during last year and the early months of 1928 will not effect the market for at least six months—and probably not at all. Wells in all the fields, with the possible exception of Rincon and Potrero, will be pumped as completed.

Denver, Colo.—E. T. Williams, organizer of E. T. Williams Oil Company, is reported to have leased a block of 10,000 acres of land near La Mission Nuez Quiz, in the State of Coahuila, Mexico. Mr. Williams was prominently identified with the pioneer development in the Salt Creek field. Geological work on the acreage just purchased will be done by Ernest Marquardt of California, formerly chief geologist for New York Oil Company.

Bakersfield, Cal.—The Ohio Oil Company, one of the most recent entries into California fields, has opened an office in this city. The company has been interested in Kern County operations since last summer, when it negotiated with the Elbe interests toward the purchase of extensive holdings in the Round Mountain field. The Bakersfield office is in the Heberfelde Building.

Shackelford County Well Means More Drilling

Fort Worth, Texas—A conservative development program is to be adhered to by Roeser-Pendleton, Inc., and Marland Oil Company on their W. I. Cook ranch property, Shackelford County, following the extension of the original field more than one mile to the north early last week with a 735-barrel flowing well from sand pay horizon at 1336-50 feet. The new strike opens the way for a large amount of drilling on the jointly owned property, and checkerboard leases held by the Republic Production Company, W. L. Knight et al and Humble Oil & Refining Company on the flanks of the production trend may also prove productive.

The Cook Ranch shallow field is credited with having produced in excess of 4,000,000 barrels of 38-40 gravity oil since the drilling in of the discovery well by Roeser-Pendleton, Inc., and Marland Oil Company on February 18, 1926, with an initial flow of 1000 barrels natural from sand pay at 1227-31 feet. This discovery was made on an almost solid block of 18,000 acres held by the two concerns, and led up to an active drilling campaign during the remainder of 1926 and the first half of 1927. Development was retarded during the last half of 1927 owing to the unsatisfactory condition of the crude market in general. More than a score of tests were drilled to the top of the pay and shut down last fall, and were not drilled in until last month.

The new extension well topped the pay on February 18, being two years to the day that the discovery well of the field made its first oil, and by coincidence both tests hit the shallow sand with a big bit, as both were prepared to go to the 3000-foot horizon.

A few producing leases on the Cook ranch are owned 100 per cent by Roeser-Pendleton, Inc., but the development of the joint leases held with Marland is handled by the former. Chas. F. Roeser, president of the corporation, has personally looked after the drilling.

The Cook sand pay has contributed a number of comparatively large flowing wells, including a few making 2000 barrels initial. A good gas pressure accompanying the flow of oil has added an extra source of revenue for the producers, as Roeser-Pendleton, Inc., erected two natural gasoline plants to handle this wet gas, which averages two and one-half gallons per 1000 cubic feet. These two gasoline plants are making about 15,000 gallons of natural gasoline daily, but are not operating at capacity at present, owing to some of the gas being used in repressuring the oil pay horizon. Satisfactory results have been met with in building up the rock pressure on the partially drained area by pumping the residue gas from the plants and nonstripped gas back into the sand.

Machines are used in drilling wells in the Cook sand, and the average cost of a completed well, including pumping equipment, is placed at $9000.

Repressuring of Depleted Sands Next Engineering Goal

Review of year's progress in meeting of engineers at New York reveals prospects of still greater advancement during 1928

By SPENCER W. ROBINSON

NEW YORK.—Petroleum production engineering is enjoying a marked advance over the altogether satisfactory achievements first generally recognized in 1926, and the remarkable results of the past year bid fair to produce a proportionately greater development in 1928. A progress story of just the more important developments of the past few months would equal the volume of data presented at the two-day meeting of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers in New York, February 22 and 23.

Engineers present at the New York meeting were presented with a full program that completely filled the two-day sessions and ran late into the evening of the second day. A brief summary of the subjects discussed is a record of the past year in the oil industry.

Paradoxically, application of newly acquired science in the production of oil, while effecting noteworthy savings in development costs, is largely credited with responsibility for the present demoralized economic structure. This comes from a hurried examination of 1927 production curves, where the Seminole field, as a result of the use of new knowledge in the application of the air and gas lift in producing wells, establishes unprecedented flush output. However, such blame cannot justly be credited to success of production engineering, but should be directed at failure of the industry to establish means of economic control that would have prevented the conversion of reserves into current supply.

A comparable progress has been made in refining technology, but as a result of the economic situation, eliminating to a certain extent the necessity for cracking, such progress lacked the influence effected by new technique in production.

Of particular interest among the new developments in production engineering is the more or less concentration on subjects dealing with the repressuring of depleted sands, or other means of recovering oil from those territories which have reached a stage of production where present methods are not economically practical. Although a considerable interest continues in the development of the air or gas lift, and such important developments as the use or intermittent injection and holding pressure on the gas trap are expected to further extend the profitable application of this method of production, a majority of the research now under way is directed at the recovery of oil previously given up as lost in the producing formations.

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Manager of Production, Empire Companies, Bartlesville, Oklahoma

Pressure Maintenance

A DEVELOPMENT along this line, the importance of which it would be hard to over estimate, was presented at the New York meeting in the form of a review of experiments being conducted in two Texas fields for what is termed the "maintenance of pressure." This paper, presented by the engineering department of the Marland Oil Company and published complete elsewhere in this

OFFICERS OF THE PETROLEUM DIVISION, A. I. M. E.

C. R. McCOLLOM
Associate Chairman

E. O. BENNETT
Vice-Chairman for Production Engineering

JOSEPH JENSEN
Vice-Chairman for Production

issue, stresses a new thought in production engineering and offers what appears to be a big step forward in practical conservation.

Briefly, the Marland Oil Company, in cooperation with several other operators, has been able to devise a means of conserving pressure in these two fields by returning the wet gas taken from the producing wells back into the sand while the wells are still in a stage of flush production.

Considerable interest was attached to this development by those at New York, and further application of this idea is expected to follow the success of the experiment.

In discussing the developments of the air or gas lift, J. B. Umpleby, chairman of one of the production engineering symposiums, summarized the principal objectives by stating that first it was to reduce cost, and second, to develop a successful application for small wells. He said that it was the problem of the production engineer to carry this method of production through to the final production of the well.

Fundamental Research

FOLLOWING presentation of the many prepared papers dealing with the various phases of production engineering, a round table discussion of petroleum engineering research problems indicated the tremendous benefits to be accomplished by a more closely directed study along the lines of fundamental research.

Subjects at this round table covered such recent developments as the importance of bottom hole temperatures, bottom hole pressures, recent developments in air and gas lift work, methods of repressuring, corrosion resulting from hydrogen sulphide, the disposition and removal of paraffin, developments in water flooding and geophysical prospecting.

The attendance at this session, while not large, was important in view of recognized authority of the few engineers who were able to participate.

As in the past, there is one session at the annual meeting in New York that stands out as unique among technical oil meetings, and that is the symposium devoted to economics.

Economics

ECONOMICS as a science is still to have its day in the petroleum industry. Production problems have received intense scientific investigation, but the problem of the relation of human greed and human needs to these products is not yet considered by the industry in general to be a scientific problem.

It was particularly fitting that the session of this meeting should open its discussion with a consideration of the "Economic Significance of West Texas," since the immediate future of the general petroleum situation hinges on West Texas development. The author, C. P. Watson of the Federal Royalties Company, is particularly fitted for discussing the situation because of his close contact with all its phases. His estimate of "future production from exploited fields," which was given as 715,000,000 barrels,

ELECTED AT THE NEW YORK MEETING, FEBRUARY, 1928

ARTHUR KNAPP
Vice-Chairman for Economics

LESTER C. UREN
Vice-Chairman for Research Engineering

H. W. CAMP
Vice-Chairman for Refinery Engineering

brought out considerable disagreement, but the net result of the discussion left this estimate as a good average.

The other high points may be summarized as follows:

The gasoline situation was ably presented by Barnabas Bryan of New York. Mr. Bryan called attention to a new phase of gasoline economics. It would appear that gasoline prices are no longer influenced by stock conditions, but seem to reflect the depression felt by crude prices through the present overproduction and large potential production of crude.

Mr. Bryan also called attention to the fact that Group Three prices seemed to be the controlling factor in the gasoline situation over the entire country east of the Rocky Mountains. He suggested that the wide range between refinery and tank wagon prices during 1927 was very much in favor of those companies who retail their own gasoline rather than those who stopped their activities at bulk or wholesale distribution.

THE natural gasoline situation was presented by D. E. Buchanan. Natural gasoline has been considered as a by-product industry, but is making a decided effort to become an independent industry through the development of new channels of distribution for its products.

Arthur Knapp of Philadelphia presented the fuel oil situation. He called attention to the fact that it is the fault of the petroleum industry itself that the fuel oil market is in its present condition. The industry has believed that there would be a gradual but continual rise in prices as a result of an impending scarcity of oil, and that once a fuel oil user was eliminated by price, he was eliminated for all time.

The recent recessions in fuel oil prices do not interest the many fuel oil users who have changed to coal or other fuels.

Mr. Knapp also called attention to the fact that nearly all economies of operation in the petroleum industry result in fuel oil economies and throw additional fuel oil into the market.

A suggestion was made that better fuel oil statistics would be of great value to the industry.

The session had the pleasure of listening to Alexander Sachs of New York. Mr. Sachs discussed economics in general and linked his remarks to the petroleum situation. He dwelt particularly on the modern idea of "Rationalization of Production." This is an idea that over-production of any kind can best be taken care of by agreements which will bring about an adjustment of production to consumption.

Following this, John H. Nelson of the Bureau of Foreign and Domestic Commerce presented an economic outlook for exports of petroleum products. Again the session profited by a discussion of general economics. Mr. Nelson stressed a fact which the petroleum industry must realize, and that is that the future holds out a promise of keener competition than has been encountered in the past.

One very significant statement by Mr. Nelson was

PETROLEUM DIVISION CHAIRMEN

The following officers were named by the Petroleum Division of the American Institute of Mining and Metallurgical Engineers at the meeting in New York, February 10, 1928:

Chairman—A. W. Ambrose,
Manager of Production, Empire Companies, Bartlesville, Oklahoma.

Associate Chairman—C. R. McCollom,
Chief Geologist, Union Oil Company of California, Los Angeles.

Vice-Chairman for Production Engineering—E. O. Bennett,
Chief Production Engineer, Marland Oil Company of Texas, Fort Worth.

Vice-Chairman for Production—Joseph Jensen,
Geologist, Associated Oil Company, Los Angeles.

Vice-Chairman for Economics—Arthur Knapp,
Petroleum Engineer, United Gas Improvements Company, Philadelphia.

Vice-Chairman for Research Engineering—Lester C. Uren,
Professor of Petroleum Engineering, University of California, Berkeley.

Vice-Chairman for Refinery Engineering—H. W. Camp,
Empire Companies, Tulsa.

George Otis Smith, Director of the United States Bureau of Mines, was elected general chairman of the American Institute of Mining and Metallurgical Engineers.

that the capital necessary to maintain a foreign market for petroleum products is far above the investment required for other commodities.

Dr. Roswell H. Johnson of the University of Pittsburgh presented one of his characteristic papers under the title, "The Loss-Ratio Method of Extrapolating Oil and Gas Decline Curves." This paper was written in collaboration with A. L. Bollene.

Dr. Johnson's contributions usually appear to be rather complicated matters as he presents them. It is only after careful examination that it is found that what he presents is always a very practical idea very simply expressed.

Refining Progress

IT was the concensus of opinion of spokesmen at the Institute convention that the drastically severe commercial and economical conditions controlling the refining industry during 1927, and which in all likelihood will prevail throughout the year 1928, are conducive to more efficient operation, and the trend toward greater economical processing of crude should continue.

The refining division at its sessions stressed particularly the importance of efficient distillation procedure, with especial attention given in a number of papers and subsequent discussion to the problems of heat utilization and combustion of fuels in distillation and steam generation.

Of particular interest was the discussion of the threatened production of sulphur-bearing or corrosive oils from the rapidly developing West Texas aera. It was brought out in the discussion that such crudes as Panhandle, and the increasing volumes from West Texas fields, are more costly to refine than the comparatively sweet crudes, such as Seminole. Engineers seem to agree that the refining cost of high sulphur content oils is about 20 cents per barrel higher than the cost of processing grades of oil similar in gravity and gasoline content, but which are "sweet." This factor, coupled with the source of West Texas production, or, in other words, the increased freight rate and other transportation charges, may tend to sustain the present low prices of the oils from this relatively new territory.

It is not felt that the processing of West Texas production will require a new refining technique or additional unusual or special apparatus and equipment. Some modification or combination of present-day methods of handling sulphurous crudes are, however, necessary due to the fact that the sulphur derivatives of many West Texas oils are of different characteristics than those with which the refining industry is intimately familiar. The hydrogen sulphide found in these oils is easily removed, but certain other sulphur compounds present more difficulty. Very likely such conditions will tend to find West Texas oils marketed at lower prices than those oils of similar gravity and gasoline content not so contaminated.

With continued high production rates in Oklahoma, Texas and California, as well as certain South American, Russian and Persian fields, and the prevailing seasonal fluctuating levels of consumption of refined products which should tend to regulate refining through-put for the coming months, the oil industry will inevitably, it seems, build up great reserves of oil fields yet undeveloped. The presence of such reserves or unexploited areas seemingly should tend to have its influence on crude oil prices, and may contribute greatly to the stabilization of prices both of crude oil and refined products.

Washington, D. C.—The State Department Monday was asked to intercede in the situation in Colombia, where a presidential decree requiring an examination of land titles will go into effect March 5.

The matter was laid before department officials by Allen W. Duiles of New York, acting as counsel for the Carib Syndicate and South American Gulf Oil Company, American companies operating in Colombia, with the hope that the department can intercede and prevent enforcement of the decree. The decree, he told officials, would be detrimental to American oil companies and might result in possible confiscation of their property. In addition to federal intercession, it is planned to contest the decree in the Colombian council of state and Colombian courts.

Effect of Repressuring Sand During Flush Stage of Production

By E. V. FORAN
Production Engineer, Marland Oil Company of Texas

THE repressuring of producing sands during the flush stage of production is a comparative new thought among most production engineers but nevertheless it is a subject, the importance of which would be hard to over estimate.

Repressuring oil sands after they have reached a stage of commercial depletion has for some time offered a means of effecting greater recovery but the application of pressure to sands while in their flush stage of production appears to be a big step forward in practical conservation.

Of particular interest is the experiment which has been conducted on the properties described in the accompanying paper and it might be well to emphasize that this research shows a way by which co-operation can be utilized toward greater production efficiencies without necessarily hindering individual initiative or restricting industrial progress.

THE repressuring of oil-producing formations during the flush stage of production, although requiring primarily the same procedure of operations on formations where the gas pressure has been depleted, offers several advantages of major importance, the value of which have not heretofore been demonstrated. It is the purpose of this paper to present an account of some recent operations of this character and the economic effects on the properties where they were applied. The principal objective in all repressuring operations is to secure an effective diffusion of the input energy to all parts of the producing sand. If this can be accomplished, success is assured during the remainder of the life of the property, otherwise it will be temporary only, and will be followed by difficulties, and the maximum possible recovery will not be obtained.

During the past year in Texas, the Cook pool in Shackelford County, and the Turbeville pool in Archer County, while still in their flush stage of production, have been subjected to repressuring operations to observe their reaction to this process during the early reaction to this process during the early stage of their productive periods. The repressuring operations carried on in each of these pools will be discussed separately in order to show peculiarities which were present in one pool but were not observed in the other.

Turbeville Pool, Archer County, Texas

The Turbeville pool is located in Archer County, about 30 miles south of Wichita Falls. The productive sand varies in thickness from 10 to 30 feet, the average being about 16 feet. The depth of the sand varies from 1450 to 1530 feet. The developed productive area is approximately 200 acres, but the limits of the pool have not yet been proven. The sand varies considerably in different parts of the pool with respect to both porosity and permeability. The gravity of the oil varies from 39 to 41 degrees A. P. I. There were some wells which flowed for a few days after completion, but during 1927, all production was secured by pumping. The initial gas reserve was very small, and its depletion was marked by a very rapid decline. There are six operators in the pool, and to simplify reference to the map, the leases will be designated by alphabetical letters.

Preliminary Survey

During the latter part of May, 1927, the Marland Oil Company made a preliminary survey of subsurface conditions to determine the natural distribution of the gas in different parts of Lease B (see Figure 1). The results of this survey showed the gas-oil ratio to be fairly uniform throughout the lease, which fact was interpreted as favorable to repressuring operations. The natural ratio at that time was 270 cubic feet per barrel. No rock pressures were determined during this survey, but it was estimated that the original rock pressure was probably not over 225 pounds. There were several wells on Lease B which were completed in areas where the sand was very tight, and these wells made small initial production, which was followed by a very rapid decline. It was deemed advisable to use these tight sand wells as input or key wells wherever possible and drive the oil from the tight sand areas to the loose sand areas where recovery was certain to be made. This led to the selection of a tight sand input well which was centrally located in Lease B. Although there was a surplus of gas available at this time, it was decided to introduce air into the input well during the first 30 days and analyze the output gas from the surrounding wells to determine the path of the input air and its degree of diffusion and range of influence in the different directions in which it traveled.

Equipment

This was equipped with a 150,000 cubic foot daily capacity, two-stage, portable compressor, which remained in service until results indicated that success was assured. The input air to the key well was measured daily through an orifice meter. This compressor was replaced after 35 days operation by an 80-horsepower, two-stage compressor, which was installed for permanent operation, at which time also gas gathering lines were laid to the casingheads of all the producing wells and meters installed at the compressor intake and output to record distribution and consumption of gas.

Operating Data

Active operations were started on June 4, 1927, when 70,000 cubic feet of air daily was forced into the sand through input well No. 1 (Figure 1). The rock pressure on Lease B at this time, based on fluid level observations, was approximately 90 pounds, and the pressure required for the sand to absorb 70,000 cubic feet of air daily was 185 pounds. As this was the first attempt at repressuring in this pool, together with the fact that it was still in the flush stage of production, it was impossible to forcast any probable results. Recording measurements were made daily on the volume of gas from each of the first and second line wells surrounding the input well. Daily oil gauges were also obtained from each of these wells from which gas was being measured.

Just prior to the introduction of the air, Lease B was producing 450 barrels of oil and 128,000 cubic feet of gas daily. This showed a gas-oil ratio of 285 cubic feet per barrel.

Results of Air Drive

During the first 10 days following the injection of the air, some slight increases in oil and gas were observed, but were not regarded as being of any importance. The output gas from all wells was analyzed daily for any traces

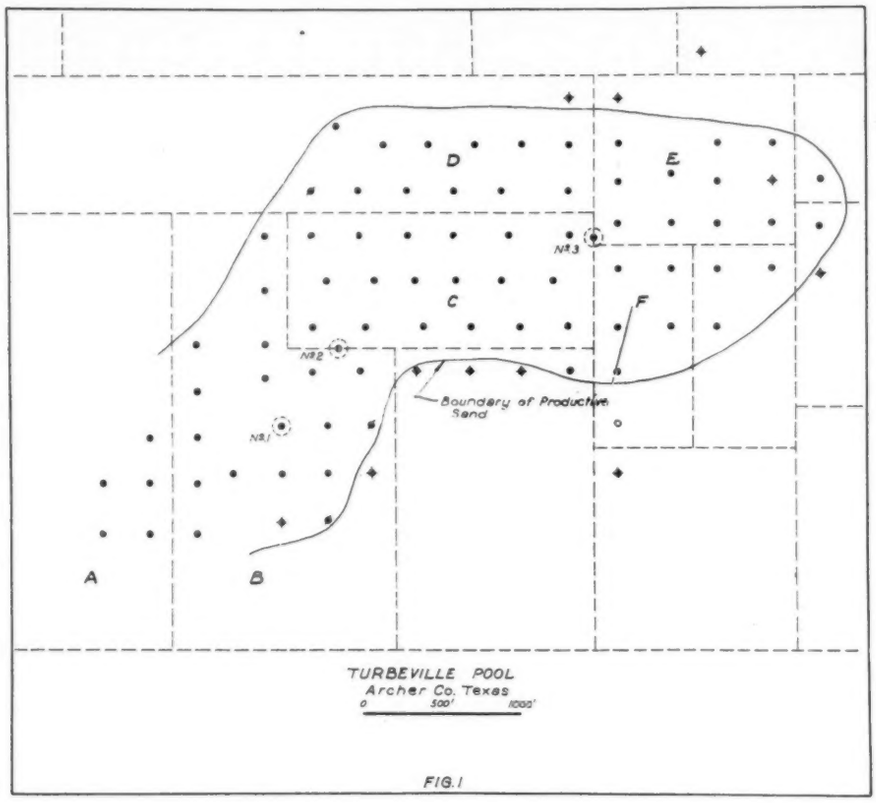

FIG. 1

of air that might be detected, but none were observed, although more than 700,000 cubic feet had entered the sand during this 10-day period. However, the second 10-day period following the injection of air showed some marked increases in both oil and gas production. These increases extended in two directions, one location to the east, and two locations to the west of the input well. A careful analysis for air showed no traces present. No changes were made with respect to the volume of input air which was entering the sand, as the increased production on each side of the input well indicated that a satisfactory distribution was being obtained.

At the end of the first 30-day period of operations, the range of pressure influence had extended beyond the boundaries of Lease B, both to the east and west of the input well. The influence to the west seemed much more marked than to the east. The persistent increases in oil and gas production in this direction were interpreted as indicating a rapid migration of the air westward. As a desirable counter force to act against the migration of too much air in this direction, the tubing of those wells which showed the greatest increases was raised 20 to 40 feet above the customary level which was the top of the sand. This resulted in a sudden drop in production in these wells due to the low rock pressure, and this practice was abandoned and instead the volume of input air was reduced to a point which was insufficient to extend its influence beyond the borders of the lease.

Recirculation of Wet Gas

On July 9, the portable air compressor was shut down and the casinghead gas was delivered to an 80-horsepower, two-stage compressor which returned 50,000 cubic feet of wet gas to the input well. No attempt was made to extract any gasoline from the gas, as this would require condensing coils and absorbers, and it was also considered an advantage to return wet gas to the sand, as this would retard the natural tendency of the remaining oil in the sand to become increasingly viscous due to its otherwise constant contact with circulating dry gas on air. The recirculated wet gas showed 2.1 gallons of gasoline per 1000 cubic feet.

During the period, June 4 to July 9, inclusive, there was a total of 2,404,000 cubic feet of air injected into the sand through the No. 1 input well, but no trace of it was found during this period. During the latter part of July, the tubing levels were raised again in an attempt to allow the return of greater volumes of gas to the sand without encountering the dangers of "by-passing" or "channelling." This result was not successful due to the rock pressure being too low to even produce oil against a fluid head of only 20 or 30 feet.

Velocity and Diffusion of Air and Gas in Sand

On July 29, 55 days after the start of operations, air was detected in the casinghead gas from the well one location (300 feet) to the east of the input well. This was followed by the appearance of air in two more wells to the northeast of the input well, one on July 31 and the other on August 2. The air content of the gas from these wells varied from 6 to 12 per cent during the first three days appearance, and reached its peak about 10 days later, showing 23 per cent on one well, 16 per cent on another and 9 per cent on the third well.

The path of the air (see Figure 2) was fan-shaped, radiating from the input well in a general northeastward direction. The average velocity of the air in its course to the nearest well was approximately six feet per day. Undoubtedly the velocity of the air close to the input well was much greater than this, but due to progressive diffusion and radiation, its velocity became very slow before appearing in the offset wells. The air content in the three wells mentioned remained from 4 per cent to 9 per cent for 40 days following the first appearance. This is further indication of complete diffusion of the air in the formation.

Although the casinghead gas from each of the wells to the west of the input well was carefully analyzed for air during the period, June 10 to December 31, no trace was found in any of them. In spite of this fact, these wells showed the greatest increase of gas and oil production during the period of repressuring.

Natural Migration of Gas and Oil

After mapping the course of the air in the sand (Figure 2) and noting the effects, it at once became apparent that the increased production to the west of the input well was the result of blockading an active stream of oil and gas whose origin was somewhere in Lease A, which is known to be the area of highest pressure in the pool, to areas of lower pressure which are known to exist to the east of Lease B. The rock pressure during this period at input well No. 1 was known to be 70 pounds, while the pressure at input well No. 2 (completed September 1) was 30 pounds. From this data it was assumed that the rock pressure on Lease A was probably 90 to 100 pounds per square inch. This would indicate that a pressure differential of 60 or 70 pounds per square inch was sufficient to cause an appreciable drainage of oil from Lease A to areas of lower pressure, although there were first and second line wells completed on this lease for protection against such drainage. The wells on Lease A were the last in this pool to be completed before the suspension of development operations in April, 1927. The productive limits of the pool had been reached in all directions except to the west of Lease A.

Had gas been used as an input medium during the first 35 days, instead of air, the increased gas and oil production to the west of the input well would have been interpreted as evidence of the input gas going in that direction, whereas the exact opposite was proven to have occurred.

Volume of Circulating Gas

On September 1, a "five spot" input well, to be owned and operated jointly by The Texas Company and the Marland Oil Company, was completed on the boundary line of the B and C leases. The Texas Company, operators of Lease C, completed a repressure plant on September 5, and in October completed a second "five spot" input

(Continued on page 46)

Economic Significance of West Texas Development

By C. P. WATSON

OF particular significance at the session devoted to economics at the New York meeting of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers was the consideration given to the "Economic Significance of West Texas," which was presented by C. P. Watson.

Mr. Watson emphasized the fact that the immediate future of the oil industry hinges on West Texas, and as an insight into what might be expected from this area he submits figures which indicate an ultimate recovery of 715,000,000 barrels from that territory designated as the Permian Basin of West Texas. These figures met with some argument from other students of this section, but the final conclusion of these discussions would suggest that this estimate approaches a workable average.

Mr. Watson, formerly with the Amerada Petroleum Corporation in the West Texas area, is president of the Federal Royalties Company with headquarters at Fort Worth.

ECONOMICS has been defined as the useful application of wealth or material resources. The search of alchemists in the Middle Ages for a formula by which base metals might be transmuted into gold was no more intensive than has been the search by all branches of the oil industry for methods whereby the material resources of West Texas in the nature of sulphur bearing oil might be usefully applied. The purpose of this paper as viewed by the author is to present in brief space developments that are conceded to possess economic significance.

History

The first discovery of oil in commercial quantities in the Permian Basin of West Texas was the Westbrook field, in Mitchell County, in 1920. Three years later the discovery well in the Big Lake field was completed as a small pumper (70 barrels) at 3028 feet. In 1925 discovery of the Powell or World pool, in Crockett County, stimulated activities in the Permian Basin further establishing the importance of the Permian limestones as sources of production. The years 1925 and 1926 were marked by a period of extensive leasing and drilling activities. At the close of 1926 more than seven million acres had been leased and discovery wells completed in the Hurdle, Hendrick and Yates fields, definitely establishing the importance of the Permian Basin as a source of production from free flowing wells.

Review of Fields

The producing fields in the Permian Basin are grouped on three distinct lines of folding. These may be separately identified as the Big Lake-Powell fold; the Yates, Hurdle, Church-McElroy area and the Winkler County development.

Production is derived from a porous limestone stratigraphically uniform, encountered at depths varying from 900 to 3100 feet. Lenticular sand bodies above the lime in Howard County have resulted in the development of shallow fields with daily output of 6000 barrels. These irregular sand bodies are characterized by wells of small but stable yield.

Big Lake

Estimates of future recoveries from West Texas fields may be predicated with refinements for local conditions on the past performance of the Big Lake field. Developments thus far in the field have resulted in the drilling of 203 producing wells with a total yield of 28,460,000 barrels to January 1, 1928, or 140,000 barrels per well. The proven area of the field is placed at 3500 acres, and proven undrilled locations at 196. Initial pressure of the field has declined and all wells are now being pumped. Estimates of acreage recovery for the field have been placed at 25,000 barrels per acre.

Yates

The discovery well in the Yates field was drilled October 29, 1926. The surface structure shows two highs with northwest-southeast strike. The producing zone is a brown dolomitic limestone with drilled thickness to date of 350 feet, thinning towards the edges of the field. A free gas horizon is found in the highest part of the field, but its consideration is not warranted from any economic point of view. Water is known to underlie the structure and surround it at a more or less uniform depth and exerting a hydrostatic head of approximately 700 pounds.

The expelling medium of the oil is essentially a water drive requiring careful check and restraint to prevent water coning at the bottom of the well. The initial production of wells based on hourly gauges has established a potential output of 600,000 barrels per day, the attainment of which figure over a 24-hour period is neither probable nor possible as it has been recognized by operators in the field that production methods will require restricted flow to prevent rapid water encroachment.

Pipe line outlet from the field is approximately 50,000 barrels, which has been allocated to each producer in the percentage that his proven acreage bears to the whole proven area. These figures, comparing January and February allotments, are shown in the accompanying table:

The shallow depth at which production is encountered renders drilling costs extremely low in this field, with wells completed and equipped for production at unit costs of $12,000 to $15,000. Low drilling costs and large initial production from free flowing wells are factors which viewed with respect to the proven area render this field notable in the development of West Texas.

Estimates of ultimate yield vary from 250 million to 500 million barrels. In the absence of any historical background and with little or no knowledge about the rate of water encroachment, it would appear conservative and logical to accept the lower figures of 250 million barrels to be won from 15,000 acres.

Church-McElroy

Total production from the Church-McElroy field to January 1, 1928, now identified as one continuous producing structure, was 24,100,000 barrels from 216 wells. Well spacing has been on the basis of one well to 10 acres with a recovery of 11,000 barrels per acre. Knowledge of the productive limits of the field remain at this time unknown. In the McElroy section of the field under lease to the Gulf Production Company approximately 8000 acres are proven but only partially exploited with acceretions to this latter figure highly probable as drilling is extended along the axis of the structure. Individual lease records show acreage recoveries as high as 34,000 barrels to date.

Hendrick

The Hendrick field, located in Winkler County, reached a total of 95,000 barrels daily in output at the close of the year, almost coincident with the appearance of water in several wells throughout the field. Development of the field has demonstrated a producing zone approximately 600 to 700 feet in thickness with varying degrees of porosity and suggested evidences of fissuring in the limestone. The highly irregular features encountered in the producing history of this field warrant the assumption that a field of major importance in an ultimate sense is in course of development. The limits

of the field on the south and west have been established by dry holes or water wells. The data at hand are insufficient to determine the eastern and northern limits. The present producing area embraces 8000 acres on which 48 producing wells have been drilled. Southern Crude Oil Purchasing Company's well No. 1, in section 4, block B-12, has recorded a total production in excess of 700,000 barrels since its completion in September, 1927, and continues to flow free of water at the same rate as when completed, notwithstanding its greater depth than structurally higher wells showing water encroachment. Individual wells with briefer producing histories have demonstrated similar capacities for uninterrupted and sustained output. Individual well achievements are not numerous enough at this writing to establish criteria by which reasonably competent estimates of field performance may be reached. Present knowledge of developments may justify an estimate of 15,000 barrels per acre.

Hurdle

The Hurdle district, in Crane and Upton Counties, the Westbrook field, in Mitchell County and the Powell field, in Crockett County, concludes the list of actively exploited fields producing from the Permian limestones. The immediate association of water with the oil in the Hurdle and the Powell fields has served to characterize this type of production as exceedingly stable and uniform, emphasizing the importance of bottom waters as a flushing medium in limestone beds.

Characteristics of West Texas Crudes

The physical properties of West Texas crudes are such as to create greater expense in transportation, storage and refining. The many problems involved in the treatment of this oil in refineries has led to serious consideration of the economic value of these higher sulphur bearing crudes. However, it need not be emphasized that price and supply are two fundamental factors working towards a hasty solution of these problems. The volume of oil being placed in steel storage and the amount reaching primary markets may be accepted, in the absence of more positive evidence, as indicating partial solution of the problems.

The presence of varying amounts of sulphur in the oils and the occurrence of hydrogen sulphide gases have imparted to the oil produced from the limestones in West Texas the term "sour crudes." Analyses showing the physical properties of these crudes are as follows:

Samples analyzed under direction of E. C. Lane at Bureau of Mines Experimental Station, Bartlesville.

Field—	Gravity A. P. I.	Sulphur Per cent	Per cent Gasoline	Kerosene	Gas Oil	Lube Dist.	Res.
Big Lake	38.2	0.36	32.8	9.8	13.7	17.5	24.9
Chalk	32.1	0.84	25.0	9.5	15.4	17.7	31.5
Church-McElroy	31.1	2.40	26.6	9.6	14.5	19.9	25.9
Hendrick	30.0	1.53	22.7	5.6	18.4	22.3	29.7
Yates	30.0	1.61	22.2	5.0	18.5	26.8	25.7
Westbrook	25.2	2.68	27.3	*13.3	....	....	....
Upton County	31.0	2.56	25.1	*3.0			

*Dr. C. K. Francis.

YATES FIELD PRORATION

	December 1, 1927 Proven area	Pipe Line percentage	February 1, 1928 Proven area	Pipe Line percentage
Mid-Kansas Transcontinental	4,833.6	32.17	5,163.20	35.25
California Company	3,279.73	15.28	2,361.30	16.75
Gulf Company	2,599.13	16.13	2,490.80	17.68
Roxana	1,651.19	8.82	1,361.70	9.67
Humble	1,216.32	7.18	1,109.12	7.87
McMan-Marland	697.13	8.00	697.13	4.95
McMan Oil & Gas				1.59
Simms Oil Company	393.35	6.00	393.35	2.79
Red Bank Oil Company	140.00	1.00	133.00	.9433
Marland Oil Company	119.35	2.00	119.38	.8476
Kirby-Edson	80.00	.82	85.00	.8168
Savoy-Mazda	80.00	.50	80.00	.5680
Osage Oil and T. T. Word	.....	....	2.00	.2769
Pandem Oil Corp. and Gibson	24.00	.50	39.10	.2769
Totals	15,113.80	100.00	14,259.17	100.00
Undeveloped proven acreage	1,663.31		504.89	
Grand total	16,777.11		14,764.06	

Unfavorable criticism of the physical properties has been directed in turn to crude oils of nearly all newly discovered fields. A report to the Oklahoma Corporation Commission on oil from the Healdton field in 1913 stated "The oil lacks vitality and it goes to pieces very readily; meaning that the volatile ingredients are lost, leaving it rather thick, dead and sticky. There is a very perceptible sulphur odor noticeable over the field, like that where the heavy crudes are produced in Texas, Mexico and California. These superficial data also indicate that the Healdton production can easily be rated as a fuel oil in contradistinction to a refining oil."

Smackover was acceptable solely as a fuel oil, while Mexia crude was viewed with some degree of alarm due to the high temperature and quality of the oil. The former is now yielding a total of 40 to 45 per cent gasoline, whereas the properties of Mexia crude have been found to contain excellent cracking stocks with demonstrated values equal to some of the best Mid-Continent crudes. Processing Panhandle oil through topping and pressure stills give yields of 28 to 32 per cent U. S. Motor gasoline with anti-knock values[1], with estimated comparative costs of 23 to 28 cents more per barrel for treatment than similar grades of Mid-Continent crude.

Corrosion

Corrosion of metal is essentially an electrochemical process accomplished through the agency of water. The most vigorous corrosive agencies are hydrogen sulphide and sulphur compounds which are contained in varying amounts in West Texas oil. Corrosion in the field is particularly noticeable in the decks of storage tanks, settling tanks and surface equipment containing brass or bronze fittings. Purification plants have successfully treated the hydrogen sulphide gases at a cost of 1 to 5 cents per 1000 cubic feet, rendering the treated product free from toxic and corrosive action.

Refinery experiments have found that corrosion is an action dependent upon the chemical composition of the sulphur compounds rather than the amount of sulphur present. In this connection, crude from the Luling field with less than 1 per cent sulphur content has been characterized as the "worst corroding oil of any produced in the United States."

Trunk line outlet from West Texas fields through pipe lines to primary markets is approximately 140,000 barrels daily. Outlet through tank car shipments is strictly limited by facilities provided by the railroads. Aggregate capacity of loading rack facilities is approximately 600 cars daily of 200 barrels each. Estimates of shipments by tank cars indicate total outlet through this source will vary between 100,000 and 150,000 barrels daily for the year 1928. Facilities at present completed will provide for an additional 60 to 80 thousand barrels per day outlet to storage tanks within the area. Since it is through direct market outlet that new areas exert any economic importance we find that West Texas oil is restricted in its market influence to that amount for which a primary market outlet exists. Available information indicates outlets to be as follows:

Trunk line outlets, 140,000 barrels daily.

Maximum tank car outlet, 140,000 barrels daily.

Local refinery demand, 20,000 barrels daily.

Total, 300,000 barrels daily.

Trunk line outlets building, 40,000 barrels daily (will be completed about August 1.)

Total 340,000 barrels daily.

Outlet to tank farm storage, 70,000 barrels daily.

(Continued on page 54)

[1]Refining Panhandle crude, Walter Miller, page 309 Am. Pet. Inst. Bulletin Vol 8, No. 6.

The Trend of the Petroleum Situation

By JOSEPH E. POGUE*
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THE past year in the petroleum industry was one of overproduction, rising inventories, low prices, and meagre to vanishing profits. This outcome was the result of a long period of intensive and uncompensated effort on the part of both financial and industrial interests, to stimualte supply on the theory that the primary problem facing the petroleum industry was the development of an adequate reserve of raw material to protect a large and ever-growing investment. The stimulus was applied in various forms and through diverse channels: capital had long flowed into the industry in excessive amounts under the attraction of large expected profits; the price level for crude petroleum had persistently been influenced by speculative considerations, with the result that prices declined slowly in periods of flush production and were quick to advance in anticipation of statistical improvement, thus maintaining a superfluous degree of stimulus on wildcatting and on drilling; speculation in inventories had led to the unsound, or at least unusual, business practice of accumulating huge stocks of oil; and, above all, the industry had directed the potent force of technology to the expansion of supply and achieved radical results in accelerating oil discovery, speeding up the rate of oil extraction, and enlarging the recovery of gasoline and lubricating oils from the raw material. In short, the economic conditions of 1927 were exactly those to which the objectively driven enterprise of the petroleum industry had long been directed; and the undesirable financial consequences arising therefrom reflected no lack of success in what had been set out to be achieved, but rather failure to have established concurrently the necessary means of economic control to prevent the immediate conversion of reserve into current supply, and likewise the oversight in neglecting to apply the technological force to the enlargement and diversification of the market for petroleum products. Perhaps, when viewed in its longer perspective, 1927 will stand out as the turning point in the economic policy of the petroleum industry, whereby the technique of rationalizing production made its initial claim for recognition.

Change in Stocks

The outstanding statistical feature of 1927 was an increase in stocks of all oil of approximately 64 million barrels, compared with a decrease of 25 million barrels in 1926. This increase in total inventories represented a gain of 12.2 per cent during the year, and an excess of 6.8 per cent in supply over demand; see Table 1. Since 1918, stocks of oil in the United States have increased every year, except in 1926. During 1927, the supply of all oil increased 13.7 per cent, whereas the demand for all oil expanded only 4.3 per cent.

An analysis of the change in stocks of various types of oil during the first eleven months of 1927, shown in Table 2, indicates that the main sources of oversupply were light crude east of California and heavy crude in California, stocks of products having declined slightly.

The rate of change in stocks of all oil and of crude petroleum east of California is presented graphically in Fig. 1 by months from 1923 to date. This diagram illustrates that the current cycle of overproduction had its beginning during the second half of 1926, became progressively more serious during the early months of 1927, and reached its maximum statistical intensity during the second quarter of 1927.

An analysis of the components making up the supply of all oil for 1927, is given in Table 3 in comparison with the two preceding years, where it is seen that the domestic production of crude petroleum in 1927 increased 16.1 per cent, while imports of crude oil declined 5.5 per cent and imports of products decreased 33.3 per cent.

The daily rate of crude oil production in the United States (Fig. 2) increased during the first seven months of the year, reaching a record level of nearly 2,600,000 barrels at the end of July, after which its trend was downward to the close of the year when 2,400,000 barrels per day was approached.

The high level of output attained in 1927 was caused primarily by the extraordinary yield of the Seminole district in Oklahoma and the rise of production in the Permian salt basin of West Texas. The course and size of these two contributors are illustrated in Fig. 3.

The rate of production in the Seminole district was materially increased

Table 1.—Supply of, Demand for, and Stocks of, All Oil in the United States, 1925-1927*

Year	Supply Million Barrels	Change, Per Cent	Demand Million Barrels	Change, Per Cent	Stocks, Million Barrels	Changes in Stocks, Million Barrels
1925	870		840		545	
1926	886	+ 1.9	903†	+7.3	520	—25‡
1927§	1007	+13.7	943	+4.3	584	+64

*Data from U. S. Bureau of Mines.
†December estimated.
‡Exclusive of 8,000,000-bbl. fire loss in California.
§8,000,000 bbl. of this decline in stocks was caused by a fire loss in California.

Table 2.—Analysis of Stocks of All Oil, 1925-1927

Year (Dec. 31)	Light Crude East of California	Light Crude California	Heavy Crude East of California	Heavy Crude California	Natural Gasoline at Plants	Products	Total Stocks
	Actual—in Millions of Barrels						
1925	294*	44		86	0.3	120	545
1926	225	31	53	87	0.5	123	520
1927†	300	21	48	93	0.8	119	582
	Changes from Previous Year—in Millions of Barrels						
1926	No data	—13‡	No data	+1	+0.2	+3	—25
1927†	+75	—10	—5	+6	+0.3	—4	+62

*Includes heavy crude. †Nov. 30. ‡Partly fire loss.

Table 3.—Analysis of Supply of All Oil, 1925-1927

Year	Domestic Production Crude	Natural Gas Gasoline	Benzol	Imports Crude	Imports Refined	Total
	In Thousands of Barrels Per Day					
1925	2093	72	5	169	45	2384
1926	2112	89	6	165	57	2429
1927*	2456	106	7	156	38	2763
	In Percentage Change from Previous Year					
1926	+ 1.0	+23.6	+20.0	—2.4	+26.8	+ 1.7
1927*	+16.1	+19.3	+16.4	—5.5	—33.3	+13.9

*December estimated.

*New York meeting, February, 1928. Copyright, 1928, by the American Institute of Mining and Metallurgical Engineers, Inc.

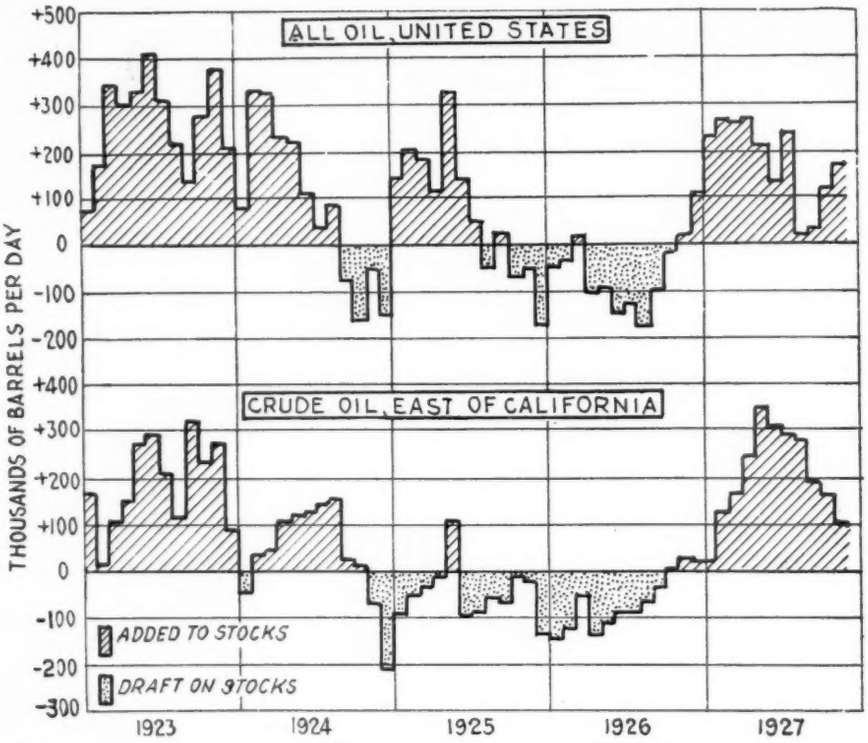


FIG. 1.—RATE OF CHANGE IN THE STOCKS OF (a) ALL OIL IN THE UNITED STATES AND (b) CRUDE OIL IN TANK FARMS AND PIPE LINES EAST OF CALIFORNIA, BY MONTHS, 1923-1927.

by the successful application of the gas-air lift, a relatively new technique never before applied on a grand scale. The effect of this method of production was to augment substantially, and possibly as much as double, the 1927 yield from this field. The stippled area under the heavy curve in Fig. 3 illustrates the hypothetical contribution made by this technique, and it is an interesting coincidence that the size of this estimated contribution coincides almost exactly with the statistical measure of overproduction in 1927. The Seminole oil is high in gravity and consequently rich in gasoline, and the oversupply of this grade of crude contributed materially to the decline in the gasoline market. During the year about seven new productive areas were proved in the Seminole district, but their active development was deferred until later by an agreement among the operators.

The Permian salt basin in West Texas underwent very rapid exploration and development in 1927; three major pools were proved and partly developed (McElroy-University, Yates and Hendricks), and the output of the region was apporaching 300,000 barrels daily by the close of the year (Fig. 3). Because of the isolation of the area and the lack of adequate transportation facilities, however, the output of the district was restrained below its potential capacity and therefore the main contribution of the region was deferred until 1928. The oil occurs at relatively shallow depths and consequently is fairly low in first cost; but it has a high sulphur content, which increases the cost of refining and cracking. Its gasoline content averages between 20 and 25 per cent, and hence its main contribution, for a time, will be to the fuel oil supply. Because of the premature exploitation of the region, in advance of adequate transportation facilities and a market need for the oil, the operators are faced with very low prices and the predicament of having to enter on a large program of storage. The availability of cheap oil in West Texas has stimulated the construction of several trunk pipe lines, and the physical outlets are undergoing further expansion.

Other elements entering into the oversupply of crude oil in 1927, though less important than the two described above, include the deep sands in the Spindletop pool in Texas, the Seal Beach and Ventura pools in California, the doubling of the pipe line capacity serving the interior of Colombia, and the rise of production in the Maracaibo Basin of Venezuela, not to mention a sharp increase in the output of Russia and Rumania. An additional factor of undoubted importance, though one that cannot be measured, was the general progress in production engineering leading to a more efficient handling of producing wells and a consequent retardation in their rates of decline.

As a result of the price decline early in 1927, the rate of oil well drilling materially slowed down, as shown in Fig. 4, reaching at the close of the year the lowest level attained in some time. The decline, however, affected wells of inferior prospective calibre and hence the bearing on the total supply was minimized. The importance of flush wells in contributing to the total supply is illustrated in Fig. 5, which shows the relationship between wells and production. For example, it may be read from Fig. 5 that:

1 per cent of the wells produce 40 per cent of the total supply.

5 per cent of the wells produce 65 per cent of the total supply.

10 per cent of the wells produce 78 per cent of the total supply.

20 per cent of the wells produce 90 per cent of the total supply.

50 per cent of the wells produce 91.5 per cent of the total supply.

Thus, to put the matter in another way, 96 per cent of the wells, from the

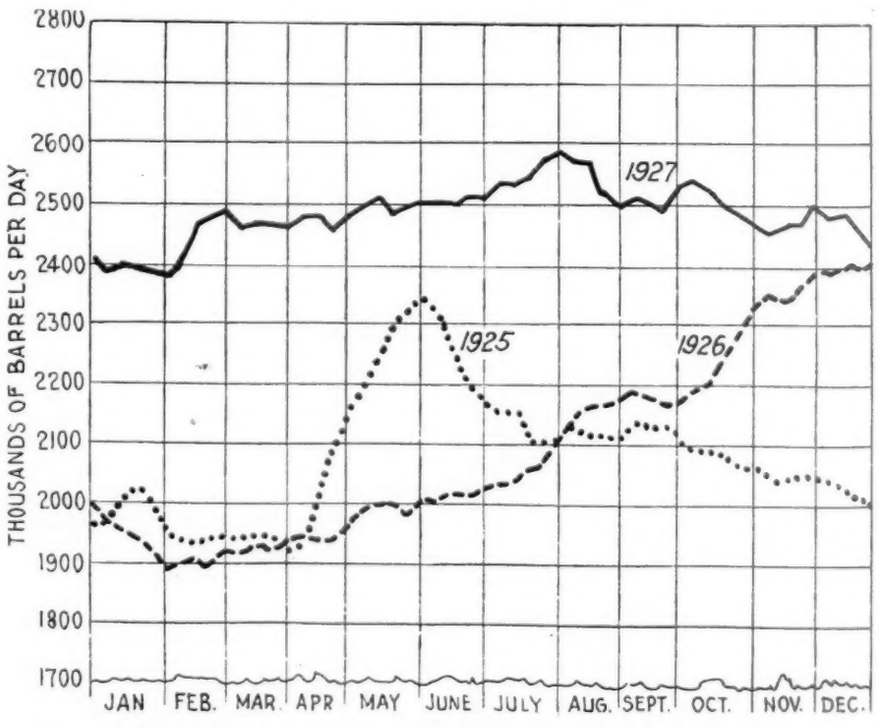


FIG. 2.—DAILY RATE OF GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES IN 1927 COMPARED WITH 1926 AND 1925.

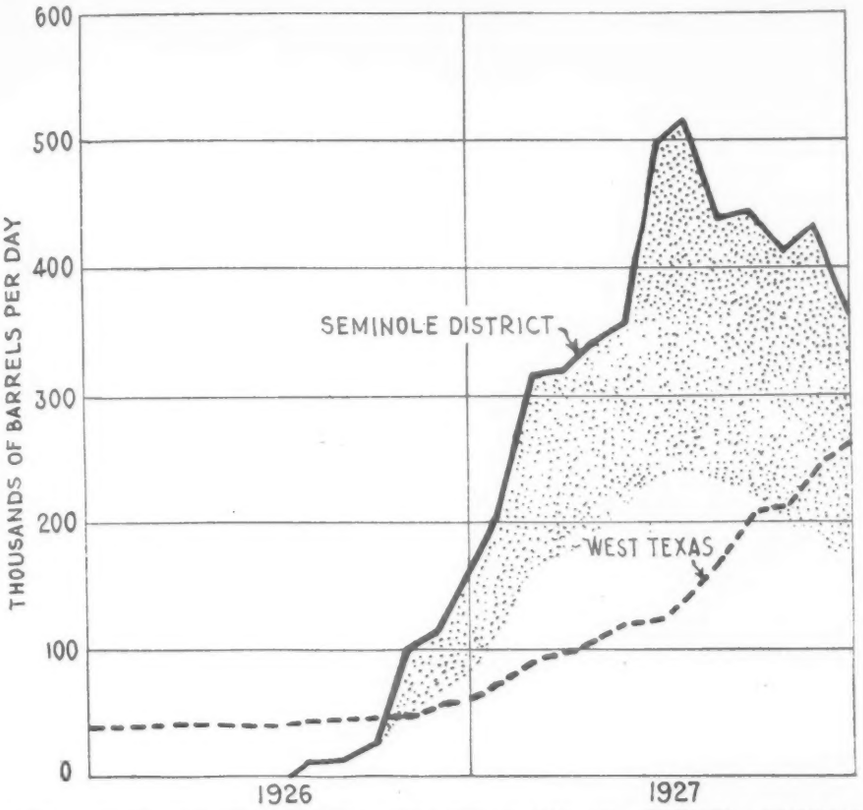


FIG. 3.—TREND OF PRODUCTION IN THE TWO MAJOR OIL DISTRICTS (SEMINOLE AND WEST TEXAS) EXPLOITED IN THE UNITED STATES IN 1927, SHOWING THE RAPIDITY OF DEVELOPMENT OF THESE NEW SOURCES OF SUPPLY. THE STIPPLED AREA ILLUSTRATES THE HYPOTHETICAL CONTRIBUTION MADE BY THE GAS-AIR LIFT.

smallest up, are the equivalent in production of 1 per cent of the wells, from the largest down. As the largest wells are the lowest-cost producers, the difficulty experieenced by low prices in retarding production is readily understandable.

Demand

An analysis of the demand for all oil is given in Table 4, where it may be seen that in 1927, as compared with 1926, domestic demand increased 3.8 per cent, exports of crude oil remained unchanged, and exports of products increased 9.3 per cent, an increase of 4.3 per cent in total demand. This relatively small increase in demand was one of the adverse factors affecting markets in 1927; accompanying the overproduction of 1923, for example, demand showed a reported increase of 23.7 per cent!

For the first eleven months of 1927, in comparison with the corresponding period of 1926, the demand for the principal products showed the following changes:

Product	Per Cent
Gasoline	= +12.3
Kerosene	= — 6.1
Fuel oil	= + 4.1
Lubricants	= — 1.0
All others	= — 8.6
Total	= + 4.2

The principal components of "all others" as shown in the foregoing tabulations are: crude used as such and losses. The marked decline inidcated is probably to be attributed to growing efficiency in the handling and utilization of the raw material, coupled with the encroachment of natural gas as fuel in the oil field and refineries*

Refinery Operations

The trend of refinery operations in the United States by months from 1918 to date is shown in Fig. 6. The lower of the two curves depicts the actual runs of crude oil to stills, together with the sharp upward trend followed; while the upper curve gives the figures, corrected for seasonal and growth, expressed as percentages of computed normal. It may be seen that 1927 was entered with refinery operations at high levels, that is to say, with the refineries overproducing; but as the year progressed the relative trend of operations was downward, though at no time were operations retarded to the point of underproduction, a desideratum for market recovery. It is perhaps worthy of mention that the figures indicate that the refiners of the country during the first part of 1927 supported a weakening crude market by inflating their demand for crude oil and therefore contributed to the market debacle that followed.

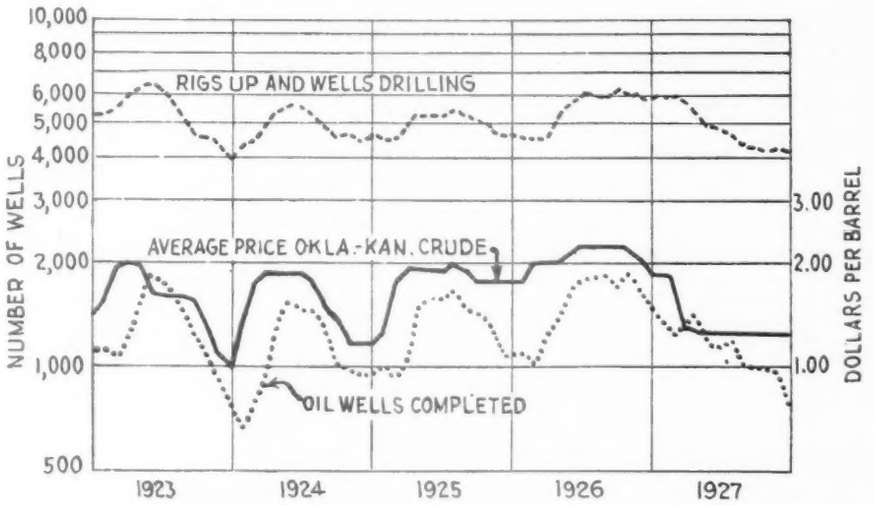


FIG. 4.—TREND OF DRILLING OPERATIONS EAST OF CALIFORNIA BY MONTHS, 1923-1927, SHOWING THE HIGH DEGREE OF CORRELATION WITH PRICE, AND THE DECLINE OF OPERATIONS UNDER THE INFLUENCE OF A LOW MARKET IN 1927.

Gasoline

A remarkable feature of the gasoilne situation in 1927 was that, despite the large overproduction of crude oil rich in gasoline, stocks of gasoline were reduced about 7,000,000 barrels, or 17 per cent. This feature is shown graphicalyl in Fig. 7, together with the primary cause therefor; namely, the retardation in the output of cracked gasoline

*The magnitude of this decline and its concentration in the forepart of the year raises the possibility that it may be due, in part, to errors in the primary statistics.

Table 4.—Analysis of Demand for All Oil, 1925-1927
In Thousands of Barrels Per Day

Year	Domestic Demand	Exports Crude	Exports Products	Total Demand
1925	1990	37	274	2301
1926	2114*	42	318	2474*
1927†	2191	42	348	2581
	In Percentage Changes from Previous Year			
1926	+6.2	+13.4	+16.0	+7.3
1927†	+3.8	0	+ 9.3	+4.3

*December estimated.
†Exclusive of 8,000,000-bbl. fire loss in California.

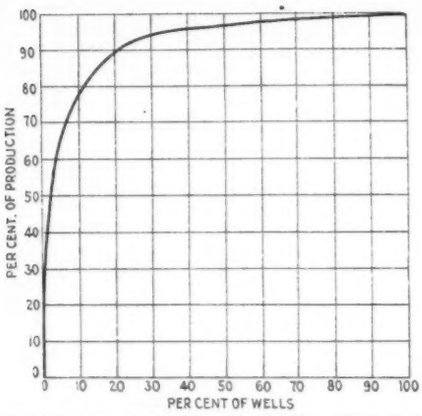


FIGURE 5.—CHART SHOWING THE RELATION BETWEEN NUMBER OF OIL WELLS AND VOLUME OF OUTPUT, ILLUSTRATING THAT A VERY LARGE PROPORTION OF CURRENT SUPPLY IS DERIVED FROM A STRIKINGLY SMALL PERCENTAGE OF WELLS. DATA FROM AMERICAN PETROLEUM INSTITUTE AS OF OCTOBER, 1927

brought about by the decline in gasoline prices. The stippled area on the lower diagram in Fig. 7 illustrates the hypothetical degree to which low prices were effective in cutting down the supply of cracked gasoline. An interesting outcome of this situation was that, whereas for nine years previously there had existed a high degree of correlation between price and gasoline stocks had existed (with growth and seasonal elements eliminated), in 1927 the relative level of stocks was gradually reduced without improvement in price. The presence of unused cracking capacity apparently acted in lieu of stocks in its economic effect.

Comparative data on the gasoline situation in 1927 and the two previous years are given in Table 5. It is there seen that in 1927, the supply of gasoline increased 10.0 per cent, while the demand for gasoline enlarged 12.2 per cent, thus causing a reduction in stocks.

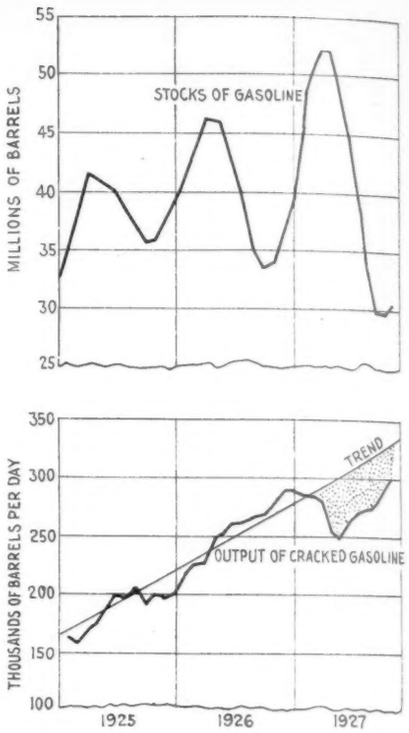
The fuel oil situation was unfavorably affected in 1927 by the oversupply of crude oil, the retardation suffered

Table 5.—Gasoline Data, 1925-1927
In Millions of Barrels

Year	Production Cracked Gasoline	Production Straight-run Gasoline	Natural Gasoline	Imports	Total Supply	Domestic Demand	Total Demand	Stocks End of Year
1925	69	173	17	4	263	224	255	39
1926	94	182	24	6	306	262	305	39
1927*	102	198	32	5	337	298	343	33
In Percentage Change from Previous Year								
1926	+36.2	+5.1	+41.0	+50.0	+16.3	+17.0	+19.6	0
1927*	+ 8.6	+8.9	+33.3	—16.7	+10.0	+13.7	+12.2	—15.4

*December estimated.

6.—INDEX OF REFINERY OPERATIONS IN THE UNITED STATES BY MONTHS, 1918-1927.



by cracking, and the slow rate of growth in demand brought about by the high pricese prevailing in 1925 and 1926. Later on in the year, the growing output of low-cost crudes in West Texas and Venezuela had a further depressing effect, and fuel oil prices ended the year at the lowest levels for that period. The fuel oil situation has been especially handicapped by the manner in which the product has been merchandised, in respect to the lack of assurance of a stable source of supply extended to prospective consumers and a general neglect of means for extending its higher-use markets. Low prices may be expected to bring growing attention to these matters.

Prices

The statistical developments of the petroleum industry naturally resulted in a drastic decline in prices, the degree and severity of which is shown in Table 6 and Fig. 8. The major declines took place toward the close of the first quarter of the year, but prices weakened further and closed the year at low levels, representing the longest price depression experienced by the industry since 1914-1915.

The change in the average price level in 1927 from 1926 may be briefly summarized as follows for the principal commodities:

Products	Per Cent
Crude Oil	= —21
Gasoline	= —14
Kerosene	= —12
Fuel Oil	= —22
Lubricants	= — 3

These changes are approximations merely as they represent posted and spot prices; contract prices for gasoline and fuel oil particularly would doubtless show larger drownward revisions.

The drastic decline in prices was nat-

Table 6.—Trend of Relative Prices of Crude Petroleum and Its Principal Derivatives in the United States, 1913 to 1927, Inclusive, and by Months, 1927

Prices in 1913 = 100

By Years	Crude Petroleum at Wells	Gasoline, Tank Wagon	Kerosene, Tank Wagon	Fuel Oil at Refinery	Lubricating Oil Jobbing Quotations
1913	100	100	100	100	100
1914	82	83	97	85	101
1915	66	75	90	68	97
1916	117	121	101	98	119
1917	155	132	108	147	126
1918	195	139	130	189	200
1919	197	142	162	149	209
1920	302	170	217	262	318
1921	163	143	164	122	179
1922	156	140	158	117	132
1923	150	112	163	113	125
1924	161	102	162	127	149
1925	172	106	156	137	170
1926	178	112	187	138	170
1927	136	96	164	108	165
Months 1927					
Jan.	165	109	175	139	157
Feb.	164	108	172	139	163
March	137	102	169	131	163
April	133	96	168	117	165
May	131	96	162	103	166
June	131	93	161	98	167
July	131	94	161	98	167
Aug.	128	92	161	94	168
Sept.	128	91	161	94	169
Oct.	128	91	161	97	167
Nov.	128	91	161	91	161
Dec.	130	91	161	88	158

urally accompanied by a serious impairment of earning power on the part of oil companies. While the results for the full year are not yet available, the quarterly reports of 23 oil companies reveal a net income of $56,000,000 for the first nine months of 1927 against $132,000,000 for the corresponding period of 1926, a decline of 58 per cent. This reduction in earning power was also reflected in a liquidation of oil securities, which declined on the average about 17 per cent between the end of February and the middle of July, when the low point for the year was reached.

It may be noted that the conditions of easy money prevalent in this country in 1927 not only prevented a more serious decline in oil escurities but enabled oil companies to finance themselves for current operations and even in many instances for expansion, approximately a half billion dollars of new capital having gone into the oil industry during the year for these purposes.

Economic Control

As the year progressed, the industry directed growing attention to means for gaining greater economic control over supply. In the case of the Seminole field, the operators entered into a cooperative agreement for prorating production at the peak and for the restraint of drilling around new discovery wells; as a result, a number of pools in that district have been deferred for development later. In the Yates pool in West Texas, proration measures were instigated to obviate the storage of large volumes of oil, as would have been necessary if production had gone forward unrestricted in the face of inadequate transportation facilities.

The Federal Oil Conservation Board devoted further attention to the study of the oil problem and late in the year appointed a committee of nine, representing the government, the oil industry, and the American Bar Association, to study the economic and legal aspects of overproduction and to recommend legislation bearing thereon. Also, at the annual convention of the American Petroleum Institute in December, the oil industry recorded itself as favoring a policy of state legislation to effect the conservation of natural gas as a means of regulating crude oil production. So far, the efforts looking toward the control of supply have been directed more along legalistic channels than in economic directions.

Conclusions

The seriousness of overproduction during 1927 and the widespread realization that the productive capacity of the industry has been so overstimulated that any early fundamental betterment in the situation must come from the development of economic restraint, rather than as a result of a natural decline in supply or a normal growth in demand, have brought to the fore a new point of view in the industry—one that will doubtless struggle for greater recognition and clearer definition during the current year. The necessity for greater economic control in the production of oil is becoming rather widely recognized, but the means for achieving this result are by no means clearly envisaged and as to them the greatest diversity of opinion still prevails. The probelm is extremely intricate, and time will doubtless be required for new economic forces to get established and become effective.

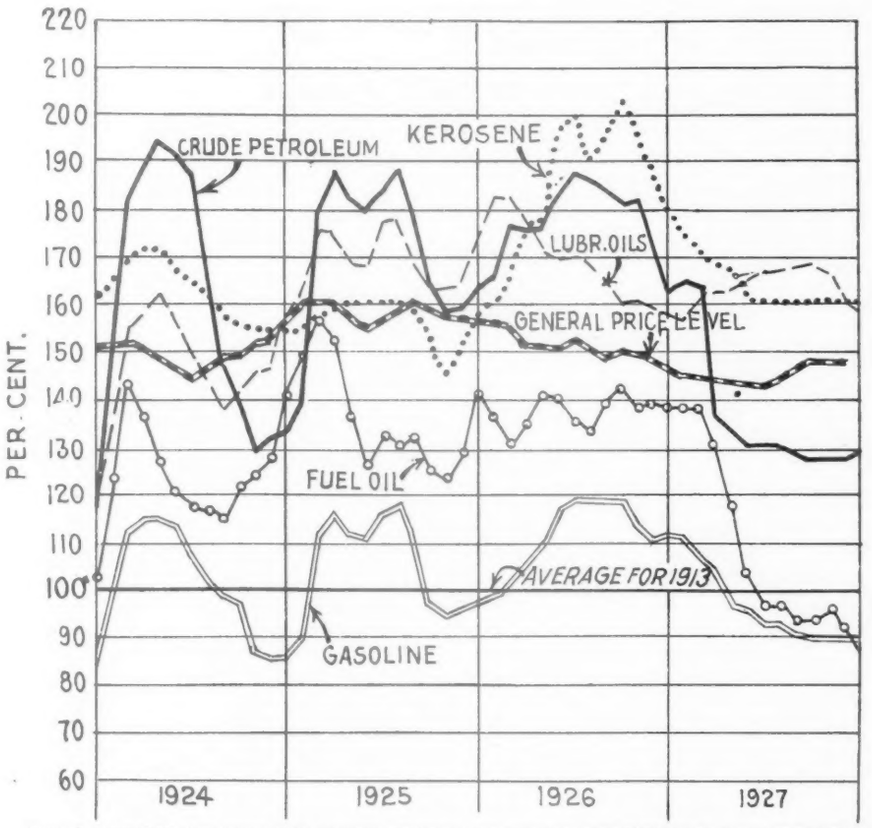


FIG. 8.—TREND OF THE RELATIVE PRICES OF CRUDE PETROLEUM AND ITS PRINCIPAL DERIVATIVES IN THE UNITED STATES BY MONTHS, 1924-1927, IN PERCENTAGES OF THE AVERAGE PRICES IN 1913 AND IN COMPARISON WITH THE GENERAL PRICE LEVEL. (PRICES IN 1913 = 100.)

Developments in Air-Gas Lift in the Mid-Continent

By C. V. MILLIKAN
Amerada Petroleum Corporation

NEW developments in air-gas lift practices in the Mid-Continent area during the past few months have done much to increase the efficiency of installations, and thus bring within economic limit of air-gas lift many wells which could not have been flowed profitably before. After the gas lift had so thoroughly demonstrated its value in the Seminole field its use spread to other areas and many installations were made, the economy of which could be questioned. In the Seminole area when production began to decline it was necessary either to increase the efficiency of the air or gas lift or to put the wells on the pump, and pumping was not a process of lifting oil to which any operator looked forward with hope. These conditions have resulted in the development of many practices which increase the efficiency and permit the wells to be flowed with air or gas which earlier could not have been flowed economically, and wells which have been flowing to continue to a lower rate of production. The practices which have come into more common usage in the Mid-Continent area recently are mostly revivals of and improvements on practices which have been known in air-lift work for several years. Many are peculiar to the individual well on which they are used.

Intermittent Injection of Gas

Some interesting results are being obtained in Seminole and other districts by intermittent injection of gas. Gas is introduced during periods of three to five minutes at a rate considerably over that necessary to acquire the production at a steady rate of injection, and is then cut off for a period of three to fifteen minutes. Two to five wells are run from the same group of compressors. The total volume of gas required is sometimes reduced to as much as one-third of that required when it is introduced at a constant rate, without changing the amount of oil production. The maximum pressure required is usually higher, but the average equal to or lower than that required for constant rate of flow. The effect on the wells is usually an irregular rate of flowing which may cause inconvenience where recycling is practiced. It would seem that this increase in efficiency is due to less slippage when the gas is introduced intermittently than when it is introduced steadily, and is rather opposite to the more commonly held theory that the smaller the bubbles of gas when introduced into the column of fluid the greater the efficiency of the lift.

Intermittent flowing is a method of air or gas lift which has been practiced in some shallow fields for many years but is not yet established as a common practice in newer and deeper production. Some small wells have been flowed three to six times a day and the same production obtained as when they were flowed continuously. It has been used some on wells making considerably more fluid, but the practice is not common. Flowing intermittently where recycling is practiced throws an overload on the compressors at each head with an underload between heads, and this in turn causes an uneven volume to be delivered to all wells being flowed from the compressor plant. Were it not for this uneven load, intermittent flowing would probably be used more extensively than it is at the present time, especially on wells making only a few hundred barrels of fluid.

Three methods of intermittent flowing are used. One is with tubing arrangement the same as for continuous flowing and another with the tubing set on a packer with perforations above the packer and valve below the perforations. The third is to run two strings of tubing, the larger size being ordinarily 2½-inch or three-inch with a valve on the bottom and a smaller size inside. A few joints of larger size are sometimes run on the bottom of the outer string for a volume chamber. The latter two methods have the advantage of keeping high pressures off of the sand, although this is not often detrimental except when the pressure is held long enough to force the oil back into the sand instead of up the tubing. When more dependable kick-off valves are available, intermittent flowing will be in more common use.

Pressure on Trap

Holding pressure on the gas trap is becoming a more general practice, especially where the gas is recycled. Most compressors are driven with an engine or motor of sufficient power to run the compressor with atmosphere intake pressure and a discharge pressure much higher than the working pressure of the particular well being flowed. By holding a pressure on the gas trap the gas can be delivered to the compressors at a pressure above atmospheric, and the surplus power utilized by the larger volume delivered. Trap pressure up to ten pounds does not often affect the production and frequently a much higher pressure can be held. In the deeper wells there is seldom any effect on the working pressure, but in shallow wells it is usually changed the same amount as the pressure held on the trap, even for three to five pounds. Even where the flowing pressure is increased when pressure is held on the trap, the small additional power cost may be more than saved by reduction in amount of equipment required, due to the increase in volume delivered by the compressors already installed.

The use of instruments for automatically controlling the volume of air delivered to a well has been considerably abused and as a consequence they are not as popular as they were a few months ago. In a plant which is equipped with a volume controller on each well there is a tendency to use all the controllers, even though a majority of the wells require much less pressure than others. Such a practice not only requires more power but reduces efficiency of the compressor and increases wear on equipment.

The instruments are valuable when used only on wells with approximately the same working pressure, as their use will often allow part of the machinery to be shut down, and then when it is necessary to shut down a compressor for a short time the decrease in volume to any one well may not be so great as to cause it to stop flowing. If conditions should arise making it desirable to flow two wells with different working pressures from the same group of compressors, the volume can be satisfactorily controlled by partially opening a gate or needle valve between their pressure lines. This method has the advantage that the compressor connected direct to the well with the lower pressure does not have to work against the same pressure as that required by the higher pressure well, which is necessary if an automatic control is used. If recycling is practiced and the intake pressure to the compressor very irregular, a needle valve will not give the perfect control obtained by an automatic controller, but does not often vary sufficiently to affect the oil production.

Graduated Tubing

Graduated tubing is becoming more commonly used throughout the Mid-

(Continued on page 51)

Committee Works Out New Program South of Little River

Operators to join in drilling 10 test wells; big oil production found in wildcat drilled for gas south of Burbank

By WALLACE DAVIS
Staff Representative

TULSA—A new development program for the "7-6" area south of Little River, outlined recently by Umpire Ray M. Collins, and agreed upon Monday at a meeting of Seminole field operators, is apparently destined to hold this area out of the danger class. The gist of the new agreement is as follows:

Two wildcat producers in that territory will be opened March 1 to flow at full capacity until the first of the three offsets, which are allowed to begin drilling March 1, is completed; then these two producers, with any completed offsets, will be pinched to 50 barrels daily for 75 days following March 1. After this 75-day period has elapsed each of the wells will be allowed to flow wide open. Furthermore, provision has been made in the program for the drilling of 10 test wells located at about equal intervals throughout the area, beginning March 1. The three companies owning the offset locations to each of these 10 locations are to furnish $10,000 dry-hole money each in case of a failure in the test well. In the event of a producer in the test well the well is to be pinched to 50 barrels daily immediately, at which time the three offset locations are allowed to start. On completion of the first of these three offsets as a producer the initial test well is to be opened to full capacity as is the new producer.

The two wildcat producers mentioned are Independent Oil & Gas Company's Harris 1, in the northwest quarter of section 23-7-6, and Snowden & McSweeney's Tiger 1, in the northwest quarter of section 13-7-6.

This agreement, effective March 1, is the best program yet outlined for any of the Seminole fields from the standpoint of conservation in drilling and holding production out of the danger class for markets. Its value as a money saver to operators is seen in the saving that will result from a single dry hole in the 10 proposed test well locations. The companies paying $10,000 dry-hole money will have saved the difference between this amount and the cost of drilling their own dry holes, which are averaging around $60,000 in this sector. They will be protected by the shut-in clause in the event of a well from the single test well location. All in all it marks a great step toward real co-operative development among Seminole operators.

The 10 test well locations have not been definitely made, but will be staked at points decided by the operators, covering as nearly as possible the potential producing area south of Little River. Under this plan the "7-6" territory will be pretty thoroughly wildcatted, and the element of competition will be largely removed from the development program.

Seminole Production

Seminole production found a new low level with last Saturday's gauge at which time the output was 304,184 barrels from the five fields. Sunday's and Monday's gauges on production registered a comeback with the yield as follows, by fields:

	Feb. 26	Wells	Feb. 27	Wells
Little River	33,383	99	33,197	99
Maud	.....	2	.....	2
Bowlegs	87,735	311	87,882	312
Earlsboro	110,659	286	110,644	286
Seminole City	57,262	314	57,087	314
Searight	18,088	70	18,184	70
Total	307,127	1,082	306,994	1,083

Pure Oil Company's Strothers 4, in section 10-8-6, Bowlegs pool, was the only new well added over the week-end, and it swabbed 60 barrels in four hours from Wilcox sand at 4132-52 feet.

Of interest in the Seminole territory at the opening of this week was the finding of a show of oil in Carter Oil Company's Smith 1 wildcat, in the southwest corner of section 7-8-7, about a mile from the northeast edge of Bowlegs pool. Oil was showing in Wilcox sand topped at 4293 feet and drilled to 4301 feet. Prospects for the widening of Little River pool to the east looked fair Monday when Magnolia's Dixon 1, in the southwest corner of section 31-8-7, just out of the east edge of the field, swabbed 185 barrels of oil from Wilcox sand at 4187-89 feet with 1000 feet of oil in the hole. The hole was drilled to 4191 feet where water appeared, and was plugged back two feet.

New Osage Discovery

Kay County Gas Company has opened big pay about six miles southeast of the South Burbank (Fairfax) pool in Osage County. A rank wildcat drilling for gas on the U. S. Naval Reserve of two and one-half sections, which showed for a 200 barrel well in Wilcox sand, flowed 150 barrels an hour February 26 when deepened into the Silicious lime below the Wilcox. The Wilcox was topped at 2834 feet and drilled to the bottom at 2880 feet, where the lime was encountered. At 2899 feet, 19 feet in the lime, the well flowed 250 barrels in two hours. Location of the new producer is in the northeast of the southwest of section 22-24-7.

Kay County Gas Company was drilling for gas on this location, and found a 1,000,000-foot flow at around 1000 feet. The hole was deepened for possibilities of better gas pay when the Wilcox showed probability of a fair well. It was then drilled through the Wilcox.

The government owns the oil rights on the reserve, and is expected to sell these rights within the near future. The Naval Reserve covers all of section 22-24-7, the southwest quarter of section 15, the northwest quarter of section 23, the east half of section 21, the northwest quarter of section 27 and the northeast quarter of section 28. The producer, a rank wildcat, is located approximately in the center of this solid block. Gravity of the oil is reported about the same as that of the Burbank field, the southeastern end of which is approximately nine miles to the northwest of the new producer.

Logan County

The big pay from Wilcox sand was found in Roxana's Freelove 1, in the southwest corner of section 17-19-4, Logan County, February 22, after the well had been flowing by heads from Simpson sand for more than a week. The Wilcox was topped at 6080 feet and drilled to

OKLAHOMA-KANSAS FIELD OPERATIONS

	February 15						February 8					
	Lcn.	Rigs	Dr.	S. D.	Com.	T't'l	Lcn.	Rigs	Dr.	S. D.	Com.	T't'l
Oklahoma—Osage District—												
Burbank	1	6	34	..	6	47	..	5	37	2	5	49
Outside	4	5	21	1	4	35	2	4	25	1	4	36
Other Districts—												
Ponca City	8	5	49	22	4	79	7	5	44	17	4	77
Enid	2	4	30	15	1	52	2	5	30	15	6	58
Cushing	5	6	37	9	3	60	4	7	39	9	2	61
Tu'sa-Okmulgee	14	38	71	19	15	157	13	32	76	18	6	145
Muskogee	..	5	43	14	14	76	..	6	44	18	13	81
Shawnee-Seminole	13	34	139	13	21	220	11	30	146	19	14	220
Lawton-Duncan	2	3	58	16	7	86	3	3	56	17	12	91
Ardmore	4	16	72	13	4	109	4	15	67	13	4	103
Total Oklahoma	53	122	545	122	79	921	46	112	564	129	70	921
Kansas	43	65	127	74	19	328	32	52	134	62	22	302

6092 feet. Production February 22 was 910 barrels and increased to 1976 barrels the following day and 2306 barrels two days after completion. The gauge for Monday morning of this week showed a yield of 2121 barrels. Freelove 1, which extends the big production a mile and two locations north, is the second Logan County deep well to reach the 2000-barrel class. McCully 1 is still producing slightly more than 2000 barrels with no water showing after its completion late in May, 1927. Roxana's McDaniel 1, in the northeast of the southwest of section 16-18-4, Lovell district, flowed 75 barrels by heads from sandy shale Sunday at 4022 feet after passing up production in the Tonkawa sand last week. Roxana's Stephens 1, in the southwest of section 29-19-4, was making two bailers of water Sunday from 6052 feet after flowing 30 barrels by heads from 6086 feet. The latter depth was the result of plugging back from salt water found at 6112 feet. Ross 1, in the northwest of section 29, flowed 598 barrels natural Sunday from two feet of Wilcox at 6048-50 feet, and Williams 1, in the northwest of section 32, made 289 barrels.

Field activity in Kansas shows considerable increase during February, due to new development at Lost Springs, Marion County, and renewed activity throughout Sumner County. Oklahoma activity early in the month had little change as is shown by the accompanying table.

A. P. I. Starts Scientific Study of Corrosion Problem

ST. LOUIS—The principal result of the first meeting of the American Petroleum Institute General Committee on Corrosion held at the Statler Hotel here on February 23 and 24, was the decision to employ a research associate at the United States Bureau of Standards for the purpose of studying corrosion problems in the petroleum industry and to find means of reducing this hazard to a minimum. This associate will particularly concentrate his research to soil corrosion and protective coatings for pipe lines.

The committee voted unanimously to employ such an associate, and a number of men qualified for this work were recommended, one of which will probably be selected for the work in the near future.

The meeting here was well attended and those interested in solving the corrosion problems of the industry were very active in their participation in the several discussions.

The active work of the general committee will be carried on through three sub-committees which were appointed at this meeting.

It also developed that the problems pertaining to production and pipe and storage tank corrosion had much in common and could be grouped advantageously under one sub-committee. Refinery corrosion and marine corrosion presented distinctively different problems and necessitate separate sub-committees.

The following sub-committee assignments were made to handle production and pipe line corrosion: W. P. Haseman, chairman; P. R. Applegate, E. P. Bly, Stanley Gill, W. G. Heltzel, J. C. Walker, C. R. Weidner and H. W. Young.

The committee to handle refinery corrosion will be as follows: H. F. Perkins, chairman; E. S. Dixon, A. E. Harnsberger, Brian Mead, Ralph J. Reed, Walter Sammans and R. E. Wilson.

The committee on marine corrosion is as follows: L. A. Turnbull, chairman; E. S. Dixon, Brian Mead, H. F. Perkins, Ralph J. Reed, Walter Sammans and J. C. Walker.

R. P. Anderson of the American Petroleum Institute is chairman of the General Committee on Corrosion, and F. N. Speller of the National Tube Company is vice chairman, with D. V. Stroop, also of the Institute, serving as secretary.

South Liberty Field Extended to Northwest

Houston—The South Liberty field, Liberty County was extended about one mile northwest when The Texas Company's Green 1 was completed on February 26 as an unusually good producer. Flowing from 2290 feet, the well had an initial output of 1700 barrels, pinched in with a five-eighths-inch choke. Production is pipe line oil which tests 24.8 corrected gravity, temperature 84 degrees.

The new producer is on a 30-acre tract owned by Mrs. Ophelia Green. The Texas Company also holds a lease on 18 additional acres owned by Mrs. Green, adjoining the 30 acres on the north side. In addition to the Green land, The Texas Company also owns considerable acreage west of the new well.

Nearby acreage to the south, east and west is divided up in small leases among various companies, including the Sun Oil Company, Humble Oil & Refining Company, Gulf Production Company, Yount-Lee Oil Company, Associated Oil Company, and the Harrison Oil Company. This division of the land is likely, of course, to result in considerable drilling in the vicinity.

Interest in the South Liberty field was revived about the middle of January, this year, when the Yount-Lee Oil Company completed its Mitchell 1 for about 60 barrels, extending the field about 500 feet north. The Yount-Lee well is a little over 3500 feet deep, approximately the same depth as the older producing wells of the district. The new Texas Company well is about a mile northwest of the Yount-Lee producer.

Important Discovery of Helium in Kansas

Tulsa—Discovery of gas near Moline, Elk County, Kansas, containing 3.4 per cent helium, early in February, by the Blaudell Oil Corporation, is expected to result in the establishment of a helium plant in or near Moline by the government within the year. This helium content is reported to be the highest yet found in gas in the country, and compares with approximately 2 per cent of this property in the gas produced and treated by a plant at Dexter, Kansas, and about 1 per cent in the Amarillo gas field.

Blaudell Oil Corporation's Rettig 2, located in the center of the north line of the northeast quarter of section 29-31-10, topped the gas sand at 2120 feet and penetrated it five and one-half feet. Rock pressure of 860 pounds was developed on completion, and the well is rated as good for several million feet daily. The well location is two miles south and one mile west of Moline. The gas is entirely without gasoline content, a factor prominent in the major portion of other helium gas which makes the helium recovery an unusually expensive proposition because of treating out gasoline. The company was drilling for oil when the gas was found. Operators learned its helium value when trying to use it for fuel for further drilling and found it noncombustible.

Around the helium well the discoverers have a solid block of 1300 acres under lease.

An analysis of the gas by the Bureau of Mines in Washington found the following constituents in their respective quantities:

Nitrogen	73.82%
Methane	13.07%
Ethane	9.08%
Helium	3.40%
Oxygen	0.47%
Carbon dioxide	0.16%
Total	100.00%

Interest manifested by the government in acquiring valuable helium properties and developing them is seen in plans for expending $2,720,000 in two Texas plants, one at Amarillo and one at Fort Worth, the latter to be enlarged, having been in operation for some time. Gas in the Amarillo field is reported from a survey as carrying only about 1 per cent helium.

Production of helium during 1927, according to Bureau of Mines figures, was 6,330,054 feet, a decrease of roughly, 3,000,000 feet.

In the Dexter, Kansas, plant the helium is treated out of the gas and shipped to the government in tubes of 220 cubic feet each under 1800 pounds pressure.

Geo. B. McCamey, drilling contractor and successful wildcatter in the West Texas district with headquarters at Fort Worth, departed last week accompanied by his wife for a brief visit to Miami, Florida. McCamey, the oil field town was named after this operator, who brought in the discovery well in Upton County, West Texas district.

Big Producers Send Yates Field to New Peak

Production of 135,645 barrels from 77 wells makes this biggest individual field, with oil going into storage in field

By H. H. KING
Staff Representative

SAN ANGELO, Texas—Big producers predominated among the completions made in the Hendrick field during the past week, while the daily average production for this period climbed to a new peak of 135,645 barrels from 77 wells, a daily yield of 1524 barrels per well. The continuation of water encroachment upon the oil pay horizon is causing the operators to recover as much oil as is possible, and this policy will probably be carried out during the flush life of the field, thus piling up a record daily production in a comparatively brief period.

Field tankage is being employed by all the important producing units to take care of their production, or to supplement the limited shipments of crude from distant tank car racks. During the past week approximately 3,205,000 barrels of new tankage was purchased by three companies to store Hendrick field crude.

Humble Oil & Refining Company placed an order for 35 new 55,000-barrel steel tanks to supplement the 14 64,000-barrel steel tanks completed and building in section 8, block B-12, located on the southwest side of the field proper. Humble plans to fill this field tankage with oil run in excess of the Humble Pipe Line Company's eight-inch direct pipe line outlet to the Gulf Coast. This pipe line connection with the Hendrick field began running oil February 24, and is the only direct trunk line serving the field at present, although Atlantic Pipe Line Company's 10-inch line makes a connection with Magnolia's eight-inch trunk line at Midland, while Shell Pipe Line Company has a six-inch line extending to McCamey that will be tied into the latter's 10-inch trunk line early next summer. Atlantic Oil Producing Company is reported to have placed an order for 10 new 80,000-barrel steel tanks to augment its storage at Midland last week, while Roxana ordered six new 80,000-barrel steel tanks to be erected immediately on its "D" and "E" leases in the Hendrick field proper.

Roxana's 1,000,000 barrel concrete underground crude storage tank now under construction at Monahans, Ward County, will not be available for use in handling Hendrick field crude until about April 10, according to officials of the company. Roxana has started work on its second underground tank of similar capacity near McCamey, having decided to locate same in section 7, G. C. & S. F. survey and adjacent to its tank farm consisting of eight 80,000-barrel tanks. Equipment and forms used in building the Monahans tank are being taken to the new location as soon as they can be released.

Independent Oil & Gas Company, which held first place on daily average production in the Hendrick field last week, materially boosted its potential output by completing three big wells. This company's Grisham-Hunter (Vardeman) 2-B, section 41, block B-5, is credited with having gauged in excess of 1000 barrels of pipe line oil during first hour after drilling into the top of the big pay at a total depth of 2794 feet. This big producer is a southwest offset to Atlantic's 1-E Grisham-Hunter, which was making 12,300 barrels daily until water showed up. Independent's Grisham-Hunter 5-A flowed 500 barrels per hour on open flow test after drilling lime pay at 2935-55 feet, and had to be pinched to less than 2500 barrels daily, owing to limited storage facilities. Well number 8, on the same lease, made 4700 barrels daily when partly opened after drilling pay at 2903-04 feet, and will not be deepened until more storage is available.

Roxana Petroleum Corporation's Grisham-Hunter 2-A, section 45, block 26, gauged 700 barrels per hour on open flow test after drilling regular pay at 2741-46 feet, but was pinched to 2600 barrels for the first 14 hours. This well is located in the southeast corner of the northwest quarter of section 45, and is of particular interest since it is on the east end of the north row of wells in the field, thus indicating the possibilities of important extensions to the flush area to the north and east from this point. J. D. Collett and Atlantic Oil Producing Company and Cranfill & Reynolds, Inc., are trying to get through heavy gas producing in the upper series of the big lime to extend the field one and one-half miles to the north with a double strike.

Landreth Production Corporation and Roxana's Ida Hendrick 1-A, located in the southeast corner of the southwest quarter of section 29, block H-5, flowed 3030 barrels of pipe line oil during first 13 hours open flow gauge from pay at 3080-84 feet. This well was temporarily abandoned last October because of encountering sulphur water at 3013 feet after passing up probable oil pay horizon with only a show of oil at 2925-86 feet. Success met with by other producers in casing off stray water sands sandwiched

HENDRICK FIELD OPERATIONS

The status of field operations in the Hendrick field, Winkler County, Texas, at the close of last week is shown below by companies:

Company	Locations and Rigs	Drilling Tests	Tests in Big Lime	Completed Wells	Initial Produc'n	Average Produc'n
Amerada Petroleum Corp...	..	..	1	..	.....	.....
Arizona Mining & Eng. Co.	..	1	..	..	.....	.....
Atlantic Oil Prod. Co.....	5	3	5	4	13,810	*15,585
Atlantic & Collett-O'Keefe	..	2	1	..	.....	.....
V. T. Bolin & Company ...	..	1	..	..	.....	.....
Cranfill & Reynolds, Inc. ..	..	1	1	3	11,825	5,220
Eastland Oil Company	..	..	1	..	.....	.....
Gulf Production Company	..	5	3	6	16,695	*12,410
Humble Oil & Refining Co.	4	8	1	6	24,200	*12,850
Independent Oil & Gas Co.	..	5	1	10	57,320	*22,485
Landreth Prod. Corp. & Roxana	1	1	1	4	13,925	*9,825
Magnolia Petroleum Co. ..	..	1	3	4	11,440	3,830
Marland Oil Company	3	..	..	..	.....	.....
Joe Maxwell & L. C. Turman	..	..	4	4	5,500	*4,020
Murchison & Cranfill Bros.	3	..	2	4	6,175	1,220
Pure Oil Company	1	3	6	3	10,385	*3,255
Republic Production Co. ..	1	1	3	2	6,100	9,725
Roxana Petroleum Corp. ..	4	2	3	11	70,970	*16,275
Sheldon & Burden	..	..	1	..	.....	.....
Southern Crude & Dixie Oil	..	3	10	7	8,310	*3,930
Southern & R. A. Westbrook	2	1	12	8	10,800	*9,125
Texon Oil & Land Co.	1	..	4	1	4,100	*5,890
Totals	25	38	63	77	270,455	135,645
Totals previous week	35	29	65	68	214,285	118,160

*Production partially pinched.

in between oil and gas horizons led to the deepening of this well. Sheldon & Burden's Hendrick 1, located one mile due east of this producer, has failed to show for a commercial well after given three separate shots in the lime horizon, with a total depth of 3243 feet.

Late reports from Landreth and Roxana's Hendrick 1 "A" credit it with having developed cut oil while pinched to 1800 barrels daily, and showed as high as 12 per cent water.

A natural flow of 990 barrels daily is now coming from Gulf's Hendrick 1, which was reported last week as having successfully cased off upper pay horizon after same became flooded with water. This well was originally completed at 2842 feet, and has since been drilled to 3014 feet. Gulf plans to experiment with its other wells on this lease along the same lines as soon as the volume of fluid drops off in the upper pay series, and other producers are taking similar steps on their wells that make a high percentage of cut oil. If this practice proves successful throughout the field, the flush production can be maintained for a greater period.

McMan Oil and Gas Company is reported to have paid $200,000 cash and a like amount payable from oil to be produced for Pure Oil Company's lease on section 25 and all but the south 51 acres of section 104, Yates field. This deal was reported last week, but the consideration was not available. McMan has since acquired the strip on the south end of section 104 from Hoffman and Page interests, thus obtaining two solid tracts on the northeast and southwest sides of the Yates field. Pure elected to dispose of these two tracts rather than to put an organization in the field to protect its lines, and then not be able to market any appreciable amount of oil under the proration plan.

Another failure for the southeast side of the Yates structure was added this week when Day Brothers et al's Yates 1, section 58, encountered a flow of sulphur water at 1400 feet.

Pandem and Gibson Oil Corporation's Pecos River Bed 12, located near the Osage well, made a small flow of oil at 1080 feet after drilling 28 feet in the pay.

Iron County promised to break into the oil producing ranks this week through the wildcat efforts of P. E. Hill and associates of Mertzon, Texas, on the Horney ranch, as several hundred feet of oil with some water filled in the hole after drilling into top of sand pay at 1270 feet. This wildcat is located in the northeast corner of section 2, block 3, H. & T. C. survey.

The oil producing area in the Yates field was extended about 4000 feet due north last week when Gulf Production Company's I. G. Yates 8 encountered a stray sand pay at 405-49 feet and pumped 630 barrels of fluid, including 15 per cent b.s. and water during the first 24-hours test, and 490 barrels of fluid during the following 24-hour gauge. This oil tests 21 degree gravity corrected when conditioned with Tret-O-Lite, and treats out readily. Gulf launched this semi-wildcat test to try and determine the extent of the regular lime pay horizon on its large Runnels County survey lease, and may carry the hole down to the lime, although the performance of the shallow producer indicates that a new oil pay level is proven for the north end of the Yates structure. This shallow sand pay is also encountered on the eastern flank of the structure, but at a slightly lower depth. A gauge of the production offered by Phillips Petroleum Company's Smith-Monroe 1, which was reported last week as having widened the Yates field to the west after drilling regular lime pay at 1227-1350 feet with an estimated production of 75 barrels daily, has been delayed until March 1, since the well can not be given a connection until that date under the proration plan.

Lone Star President Moves to Dallas

Dallas, Texas—L. B. Denning, president of the Lone Star Gas Company, was guest of honor at a luncheon held here February 24 by the Dallas Wildcat Committee, a social branch of the Mid-Continent Oil & Gas Association. Denning recently moved to Dallas from Pittsburgh, Pennsylvania, and local members of the petroleum industry took this opportunity of welcoming him into their fold.

E. R. Brown, president of the Magnolia Petroleum Company, and a personal friend of Mr. Denning for many years, delivered the principal address of welcome for the honor guest, and talks also were made by Nathan Adams, banker; W. R. Guiberson, vice president of the Guiberson Corporation, and Frank L. Chase, vice president of the Lone Star Gas Company. R. A. Wilson, chairman of the Dallas Wildcat Committee, presided at the meeting, and outlined plans for formulating a luncheon club of members of the oil and gas fraternity in Dallas.

Four new members were recently added to the roster of the Dallas Wildcat Committee, and their names follow: Angus McLeod, Roxana Petroleum Corporation; C. W. Murchison, Murchison Oil Company; Carl A. Young, American Petroleum Institute, and A. B. Smith, Pandem Oil Corporation.

Move to Tulsa

Tulsa—The Mid-Continent branch of Wall Rope Works, Inc., now is located at 215-A East Archer Street here, having been removed to Tulsa from Bartlesville, Oklahoma, where Wall has maintained a branch since prior to the world war. J. Lloyd Dittman is manager of the Mid-Continent branch office. Wall Rope Works, Inc., manufactures walk laid ropes for oil country use and is one of the oldest rope makers in the business, having been established in 1830. The company's factory is at Beverly, New Jersey, and the general offices at 48 South Street, New York.

Personal Mention

C. F. (Bud) Vincent has been appointed representative for Wilson Oil Tools Corporation, with headquarters at 409 Atlas Life Building, Tulsa. Mr. Vincent is not a newcomer to the corporation, having represented the "Wilson" aggregation of tools in the West Texas fields for several years. For many years prior to his association with Wilson Oil Tools Corporation he was on the drilling crews of different companies in the Texas field where he gained practical field experience. While making headquarters at Tulsa, Mr. Vincent will keep in close touch with the newer developments in the Mid-Continent.

Harry Pennington, mechanical engineer of San Antonio, and W. C. Andrus, manager of the Houston office of the Regan Forge & Engineering Company, were in Southern Louisiana last week, visiting the Sweet Lake, Lockport and Kelso Bayou fields.

Warner Clark, general manager of The California Company, production subsidiary of the Standard Oil Company of California, with headquarters at Colorado, Texas, visited the San Francisco office of the latter concern during the past week.

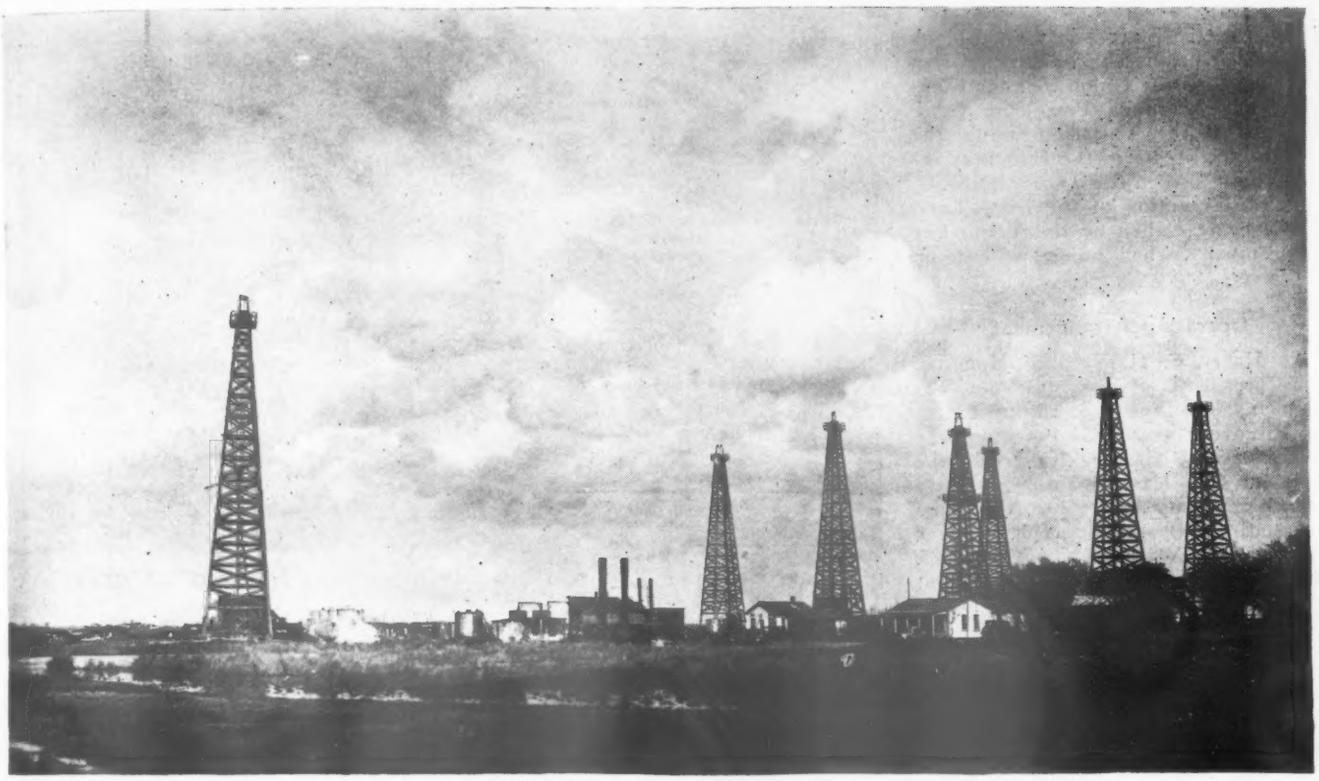
R. H. Hubbell of the Hill-Hubbell Company, with headquarters in San Francisco, will visit the offices of the company in Tulsa before returning to California from New York where he has been in the interest of the company.

W. H. Hayt, assistant general sales manager of the Eagle-Picher Lead Company of Chicago, and E. G. Hollman of the Research Laboratories at Joplin, Mo., made a recent business trip to Tulsa.

P. C. Gregory, sales manager of the Trimont Manufacturing Company of Boston, Massachusetts, has returned from a business trip to California oil fields.

George J. Humphrey, representative of the Fairbanks Company, of New York, is visiting in Tulsa with the Murray Tool and Supply Company, Mid-Continent distributors for the Fairbanks Company.

Denver, Colo.—Producers & Refiners Corporation has started moving its headquarters from Denver to Independence, Kansas, the home of the parent company, Prairie Oil & Gas Company. It is expected that all of the officers, employes, and office equipment will be moved early in March.



KELSO BAYOU FIELD AS SEEN FROM THE SOUTH

Kelso Bayou Dome Is Outstanding Seismograph Discovery

Three tests out of first four completed in field are oil producers; low costs in drilling and transportation

By JACK LOGAN
Staff Representative

LAKE CHARLES, LOUISIANA.—For about 25 years there has been drilling on the old Hackberry salt dome 25 miles southwest of here on the strength of surface indications; but the dome still remains unproductive. A little over a year ago a seismograph crew, operating about there miles east of Hackberry dome, outlined a new salt slug, now known as Kelso Bayou dome because the stream of that name flows across it. It was nearly a year before the first test was drilled on the new area, resulting in a gas blowout which cratered the well. The next test was a 1000-barrel well. The third and fourth tests were good for 1750 and 2500 barrels initial respectively. One gas blowout and three large producers out of the first four tests on the dome —such is the brief record of Kelso Bayou dome so far. The three wells now produce about 2200 barrels of net oil daily. And four new tests are going down, three of them being near the pay level.

The unusual success of this new field in Cameron Parish emphasizes the importance which geophysical exploration for salt domes has assumed in Gulf Coast activity. The clock-work manner in which the dome was outlined and opened for production deals a heavy blow to the heretofore popular theory that it is immenseley more difficult to find oil on the geophysically-discovered domes than on those revealed by surface indications. That theory suffers much by a comparison of the Kelso Bayou and the Hackberry domes, so near to one another—just as it suffers in thee light of the performance of Nash Dome, Texas, where the dry-hole record is low, of Fausse Point, Louisiana, where the first test was an oil well, and more recently of the new dome of the Gulf Refining Company in Ascension Parish, Louisiana, east of the Mississippi, where the fourth test came in for over 5000 barrels initial production.

Low Costs

Outside of being an unusual success in regard to the discovery of production, Kelso Bayou dome is unusual in two other ways, both being advantages of the field: Comparative low costs of drilling and of transportation.

Although the pay level is nearly 4000 feet deep, the wells can be drilled rapidly, because there are no very hard formations to penetrate, with the exception of a thin stratum of rock at about 1600 feet. It takes only about 60 days to rig up and drill a well in the field. The last completed producer, the Watkins 1 of the Calcasieu Oil Company, Union Sulphur Company and Magnolia Petroleum Company, required six days for setting up and 51 days of drilling. As the field shall be extended westward, the direction in which it is going, the time for drilling the wells will probably be increased, however, according to the log of the Doiron 1 of the three companies mentioned above. In that test more rock has been encountered than in the other wells. It is the most westerly test of the field.

With the exception of a State lease of the bayou, all the acreage within a wide radius from the present produc-

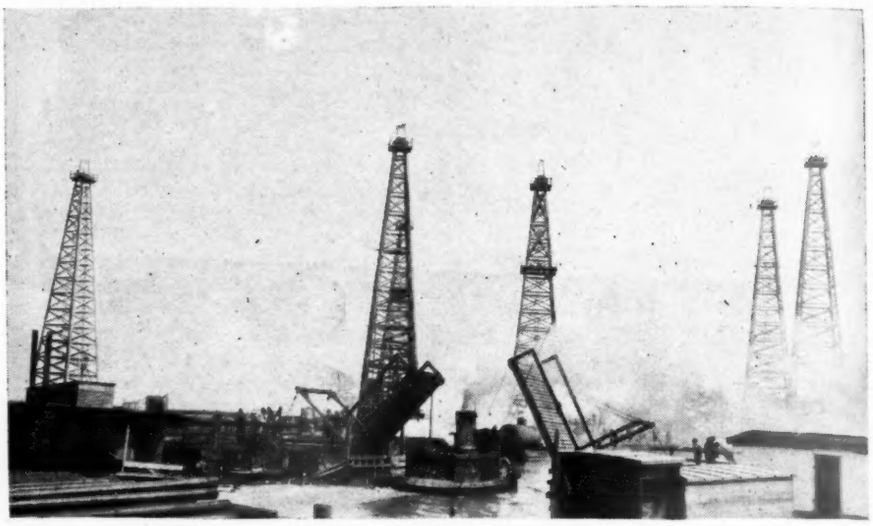
tion—about 2500 acres in a solid block—is held in partnership by the Calcasieu Oil Company, the Union Sulphur Company, and Magnoila Petroleum Company, with the Calcasieu doing the drilling. All tests in the field thus far have been drilled by those interests, with the exception of the State Land 6 now being drilled by the Yount-Lee Oil Company, which holds the lease on the bayou.

Operating Arrangement

To Harry C. Hanszen of Houston, now president of the Calcasieu Oil Company, goes much of the credit for the discovery and development of the new dome. Under his leadership the 2500 acres of leases mentioned above were blocked up and in 1926 the dome was outlined by seismograph. It was not until the latter part of May, 1927, however, that the drilling of the first test on the dome began. In the meantime the Calcasieu Oil Company had been organized, with Mr. Hanszen as president, and a partnership was worked out providing for the development of the dome by the Calcasieu Oil Company, the Union Sulphur Company and Magnolia Petroleum Company, each of the three companies to be equally interested.

Officials of the Calcasieu Oil Company besides Mr. Hanszen include J W. Gardiner of Lake Charles, vice-president; Miss Margaret Averill of Houston, secretary-treasurer; and C. N. Black of Houston, general manager. Offices of the company are in Houston.

In connection with the leases in the field, there is an interesting story as to the circumstances through which the Yount-Lee Oil Company is interested. According to this report, which has not been taken to the Yount-Lee organization for verification, that company some years ago secured leases from the State of Louisiana on Black Lake and other state property in the Hackberry dome district, and in making the leases the State insisted on the Yount-Lee Company also taking a lease on Kelso Bayou, with the result that the company reluctantly agreed to include the bayou in the transaction.



DRAW-BRIDGE OVER BAYOU, WHERE HIGHWAY PASSES THROUGH HEART OF PRESENT ACTIVITY

In the wells that have been drilled by the Calcasieu Oil Company, the amount of casing set has been approximately as follows: 960 feet of 10-inch and 3965 feet of 6⅝-inch; when the well is started a small amount of 12-inch is set but is pulled when the 10-inch is set.

The well which blew out, Calcasieu Oil Company's Caldwell 1, as well as the first two producers, the Caldwell 2 and the Olevia 1, are on the south side of the bayou. The top of the pay sand on that side of the stream is around 390 feet, while in the Watkins 1, the latest producer, located on the north side of the bayou, the top of the sand is about 20 feet higher. On the north side of the stream Calcasieu Oil Company is now drilling the Watkins 2 and the Watkins 3, while in the edge of the bayou on that side, Yount-Lee Oil Company is drilling its State Land 6. The Doiron 1 of the Calcasieu Oil Company is on the south bank of the bayou.

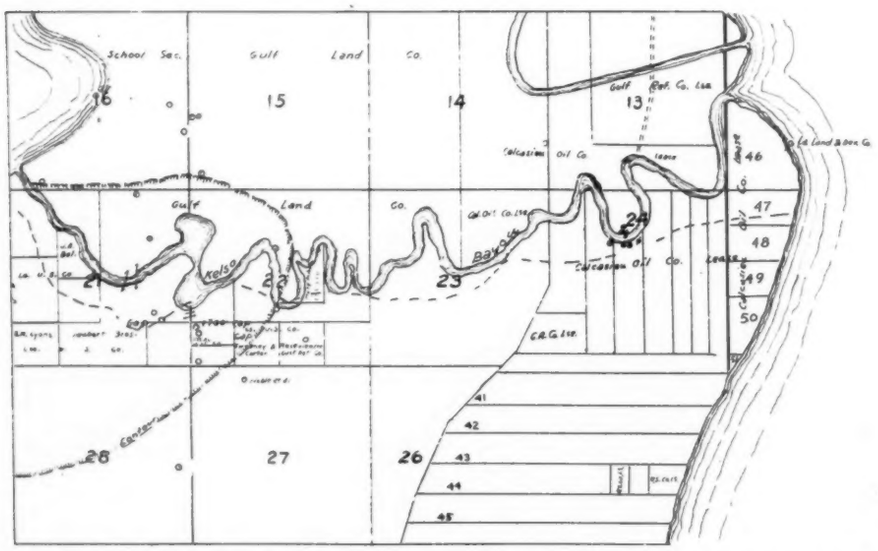
Transportation

The second favorable feature of the field, as mentioned above, is the matter of transportation. All three producers and the present drilling tests are within a hundred feet of the bayou, which is navigable. Calcasieu Oil Company has been sending its production out of the field in barges, which traverse the short distance down to the mouth of Kelso Bayou, which empties into Calcasieu Lake. The barges go thence to Beaumont, passing out of Calcasieu Lake into the Intercoastal Canal. This canal leads into Sabine River, south of Orange. Passing out of Sabine River into Sabine Lake, the barges then proceed through the lake and into the Neches River, to Beaumont. The oil is unloaded at Magnolia Petroleum Company's refinery at that place. On the return trip, the barges carry in casing and other materials. The barges each carry about 1000 barrels of oil a trip.

No immediate change is contemplated in the plan of using the barges for carrying out the production of the field; but in case the future production will justify such action, another method will probably be substituted, calling for the building of a pipe line to the Lake Charles canal, only a few miles to the north, where it could be loaded directly on sea-going tankers.

Besides the water lane into the field, there is an excellent gravel highway leading to it from Sulphur, about 15 miles north on the Old Spanish Trail.

The production of Kelso Bayou is 22 gravity oil. The first two producers are now making about 60 per cent water, but the amount of net oil is still about 1000 barrels a day for the Olevia 1 and about 100 barrels for the Caldwell 2. A late report on the production of the Watkins 1 showed it to be making around 20 per cent water and around 1200 barrels of oil. The Cald-



KELSO BAYOU FIELD, SHOWING EDGES OF BLACK LAKE AND CALCASIEU LAKE

well 2 came in about November 1, 1927, for 1000 barrels initial through a three-eighths-inch choke, and the Olevia 1 about January 15, 1928, for 1800 barrels through a half-inch choke. The Watkins 1 was completed about February 15 for an initial production of around 2500 barrels flowing through a half-inch choke.

This oil is being treated by the Petroleum Rectifying Company's process. Heretofore the production has been handled by two of these treating units, but two additional units are now being installed. Using this plant, the Calcasieu Oil Company can treat out about 1100 barrels of net oil a day per unit; hence the completion of the two new units will give a capacity of about 4500 barrels daily.

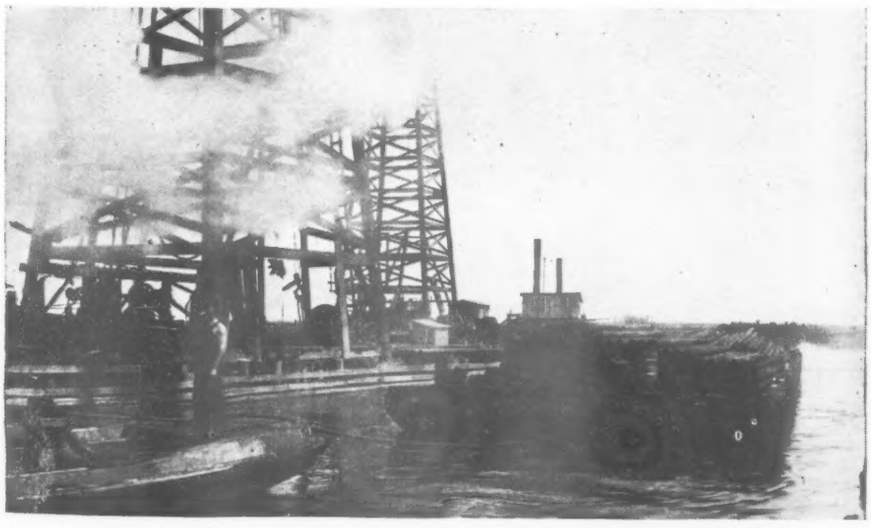
Power for the treaters is furnished by a 56 K. V. A. generator driven with a Terry steam turbine. This generator also furnishes the power for two pumps and for the electric lighting system for the company's field offices and camp.

The camp consists of a row of ready-cut, portable frame houses, located on an elevation about a quarter of a mile south of the field. The houses are neat and comfortable, with a shell road or street running in front of them.

M. H. Bostick, widely known in the Gulf Coast, is field superintendent for the Calcasieu Oil Company and associates. His brother, J. A. Bostick, is night foreman. The latter drilled the Caldwell 1, discovery well of the field.

Although the drilling of the Calcasieu Oil Company and of the Yount-Lee Oil Company is concentrated within a small radius, and consequently only a very small part of the dome has been proved up, there are two other tests which will shed interesting light on the possibilities of the new area. One of these is Noble et al'sEllender 1, which is about two miles southwest of the present Kelso Bayou producing wells. It is now reaming around 3700 feet. It was feared for a while that this hole would be lost, but it is now being carried on down. The other test which will be significant is that of the Louisiana Land & Exploration Company, the Calcasieu Lake B-1, located about one-half mile northeast of the production on Kelso Bayou dome. Material for the test is now being moved in.

Late drilling reports on the tests in the field show the Calcasieu Oil Company's Doiron 1 at 3856 feet in gumbo, the Watkins 2 at 3582 feet in gumbo, the Watkins 3 rigging up, and Yount-Lee Oil Company's test at 3250 feet.



MOVING MATERIALS UP THE BAYOU

Eastern Engineers Organize Under A. P. I.

NEW YORK—The advent of American Petroleum Institute into the field of petroleum engineering took on definite form at the organization meeting held here last Friday of the Eastern District Division of Development of Production Engineering. At this time a small group of the outstanding engineers of the Eastern district met in the board room of the American Petroleum Institute and completed the organization of this division which was previously established at the Chicago meeting of the Institute. Frank M. Brewster, Petroleum Reclamation Company, Bradford, Pennsylvania, was selected at Chicago to act as chairman of the Eastern district and W. J. Brundred, Brundred Oil Corporation, Oil City, Pennsylvania, and Forest D. Dorn, Forest Oil Corporation, Bradford, were elected at the meeting Friday to act as vice chairman and secretary, respectively.

The first step of the newly formed Eastern district division was to make plans for a meeting to be held some time about May 1 at Bradford, at which time a number of papers on practical field problems will be presented and a field inspection trip showing the progress of water flooding and other reclamation work in the Bradford field will be made.

In the discussion of those in attendance at the meeting here it was the concensus of opinion that the Division of Development and Production Engineering as created by the American Petroleum Institute should not concern itself so much with the more technical and theoretical problems of production engineering, but rather confine its consideration to practical field engineering discussion. It is hoped that the membership of these divisions will come largely from those engaged in practical field work.

In order to better determine the type of programs which will be of greatest benefit to the larger number of members, a questionnaire has been prepared to be filled out by each member, giving his experience and outlines of those subjects in which he is most interested.

A special program committee to handle the details of the proposed Bradford meeting will be appointed by Chairman Brewster in the near future, and it is expected that a more definite idea of matters to be discussed at this meeting will be made public shortly.

A similar organization meeting covering the California divisions is expected to be held immediately following the annual meeting of the American Association of Petroleum Geologists in San Francisco the latter part of March.

The Division of Development and Production Engineering as established at the Chicago meeting of the Institute was originally recommended by a special committee on technical relations acting under the appointment of President E. W. Clark. John Suman of the Humble Oil and Refining Company, is general chairman of the division, and T. E. Swigart, Shell Company of California, is general vice chairman, with C. A. Young, of the Institute's administrative staff, serving as executive secretary.

The proposed plan of organization of the new division calls for five separate divisions to handle each of the five principal geographical oil divisions of the country with each having a sectional chairman, vice chairman and secretaary. The divisional chairman, together with the general chairman, general vice chairman and executive secretary, constitute the general committee for the new division.

Any member of the Institute who is engaged or interested in the development and production of petroleum and who pays special annual divisional membership dues, may enroll as a member of the division. At present there are 370 members, of which 125 are in the Eastern district.

Effect of Repressuring Sands During Flush Stage of Production

(*Continued from page* 30)

well on the east border of Lease C. Air was injected into input well No. 2 on the B and C lease boundary line for a period of seven days, after which it was replaced by wet gas. The air was observed to move rapidly eastward through the sand, which was expected, since the lowest pressure area was known to be in this direction.

The accompanying table (Table 1) shows the average daily volumes of input and output gas on Leases B and C, together with the production data for their respective periods of observation before and during repressure operations, to January 1, 1928.

In studying the above table it will be noted that during September and October, there was no loss of gas from the subsurface reserve, as increased quantities of air were forced into the sand in order to increase pressure in the sand while extracting normal production from it at the same time. There was no by-passing due to high fluid levels maintained on the B lease. The only reaction was a sharp increase in production on the C lease, as this was a lower pressure area than the B lease. Although the line wells on the C lease were subjected to high back pressures, they did not form an effective barrier against the large volumes of input gas and air forced in the "five spot" well on the B and C lease boundary line.

A study of the tables 1 and 2 on both of the leases mentioned above shows at once how the repressuring of flush pools offers a possible solution for the conservation question, which, although widely discussed, has remained unsolved to date.

Utilization of Wet Gas

All repressure operations on both the B and C leases are being carried on with wet gas and no attempt is being made to condense any of the vapors from the compressor output gas. The stock tank on Lease B are kept at a pressure of one-half ounce below atmosphere by means of a sensitive vacuum regulator which delivers the vapors to the compressor for return to the sand. Under these conditions, there are absolutely no vapor losses either in winter or summer, whether the tanks are vapor-tight or not. If the tanks are not vapor-tight, a small amount of air may enter the lines, but no gasoline vapors can be lost to the air. It has also been observed that the recirculation of wet gas is the only method by which the oil reaches the tanks at the maximum possible gravity. Also when repressuring any producing formation at relatively low pressures, as is the case in the Turbeville pool, it becomes a valuable asset to return the gas as wet as possible, as the oil is capable of absorbing and retaining in solution considerable quantities of wet gas even under pressures of only 70 or 80 pounds, whereas residue gas or air would remain largely in the free or possibly occluded state in its relation to the oil.

Effect of Water Encroachment

An increase in bottom water was observed following the rapid decline in production on both the B and C leases. Soon after the beginning of repressure operations on the B lease, the water disappeared entirely in some of the wells where it has been present, and in the other cases further encroachment was entirely arrested. During the period from June, 1927, to January, 1928, there was no increase in water production from this lease. The C lease shows a similar history with respect to water.

Ultimate Production

The relative increases in daily production observed from repressuring during the flush stage are not as pronounced as those generally observed where these operations are delayed until the point of economic exhaustion is reached by normal methods. However, the actual net gain in barrels per day and ultimate are greater, and also the time factor required to produce oil is reduced.

The following table shows relative production data and the rise in indicated ultimate production from the two leases due to the repressuring process. Figure 3 shows graphically the effect on the production decline of these leases due to these operations.

The higher investment figure noted on the B lease was due to the use of oversize compressor equipment, as this was available and was transferred from another lease to avoid the necessity of purchasing new and lower cost equipment more suitable in size for the operations on this lease. All of the equipment on the C lease was new.

	Lease B	Lease C
Number producing wells	15	18
Number acres porductive sand	44	38
Monthly peak production	28,096	94,848
Total bbls. production prior to repressuring	192,300	459,030
Bbls. normal indicated ultimate production	290,000	....
Bbls. indicated ultimate by repressure process	380,000	....
Bbls. net ultimate increase	90,000	....
Bbls. per acre yield to January 1, 1928	6,130	14,300
Bbls. per acre yield ultimate	8,650	....
Investment in repressure equipment	$12,000	$18,000

It will be noted from analyzing the data on Figure 3 that the B lease repressure investment was returned during the first five months of operations and the C lease investment was returned in less than four months of operations. This was accomplished with the price of 40 gravity oil at $1.36 per barrel.

Cook Pool, Shackelford County, Texas

The Cook pool is located in Shackelford County, about six miles north of Albany. The producing sand in this pool is classified as a member of the Cisco series and is found from 1100 to 1350 feet. The sand varies in thickness from 6 to 30 feet, averaging about 20 feet. The structure is well defined, showing a known area of dry gas sand of about 15 acres which occupies the high portion area of the main producing sand. The known productive area of the principal sand was approximately 1000 acres on January 1, 1928. The well spacing is 300 feet.

Development Prior to Repressuring

The first production from the pool was obtained in March, 1926, and from this time until March, 1927, the development was very rapid. During this period, more than 200 producing wells were completed in the pool, leaving a large, favorably located area still undeveloped. A few of the wells flowed for a period of 60 to 90 days following completion, but due to the lack of high

Table 1
Lease B—May 1 to December 31, 1927

Month	Cu. ft. input gas	Cu. ft. output gas	Net gas from sand	Bbl. oil	Net formation ft./bbl. ratio	Remarks
May	None	145,000	145,000	540	268	Normal operations
June	74,000	123,000	49,000	454	108	Repressuring with air
July	42,000	95,000	53,000	440	120	Repressuring with wet air
Aug.	38,000	80,000	42,000	415	101	Repressuring with wet air
Sept.	91,000	76,000	None	337	0	Attempt to restore pressure
Oct.	85,000	88,000	2,000	299	7	Raised tubing levels
Nov.	47,000	100,000	53,000	306	173	Lowered tubing to normal
Dec.	59,000	106,000	47,000	290	162	Normal repressuring

Table 2
Lease C—August 1 to December 31, 1927

Month	Cu. ft. input gas	Cu. ft. output gas	Net gas from sand	Bbl. oil	Net formation ft./bbl. ratio	Remarks
Aug.	None	90,000	90,000	575	172	Normal operations
Sept.	45,000	85,000	40,000	555	72	Repressuring wet gas
Oct.	83,000	110,000	27,000	639	42	Repressuring wet gas
Nov.	82,000	105,000	23,000	577	40	Repressuring wet gas
Dec.	65,000	90,000	25,000	540	46	Repressuring wet gas

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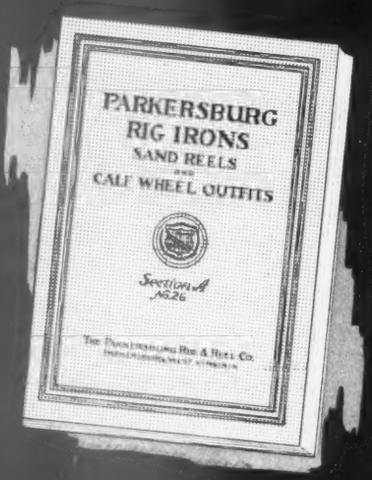

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initial rock pressure, 90 per cent of the completions were pumpers. The initial daily production of the wells varied from 30 to 1500 barrels, averaging about 125 barrels. The gravity of the oil varies from 37 to 41 degrees A. P. I. There are six companies operating in the pool, but Roeser & Pendleton, Inc., Roeser & Pendleton and Marland, and the Humble Oil & Refining Company are the only operators who are repressuring their properties.

Preliminary Survey

During April, 1927, a preliminary survey was conducted by Roeser & Pendleton and Marland for the purpose of indicating the possible advantages of repressuring the pool while still in the flush stage. The gas-oil ratio was observed to vary 350 to 1300 cubic feet per barrel, averaging about 900 cubic feet. Average daily production at this time was 7700 barrels.

A representative area in the south part of the pool was choosen for a repressure test, and operations were started April 9, 1927. The area in which the tests were carried on showed a rock pressure of from 90 to 110 pounds per square inch, these pressures being determined by pressure gauges submerged to the bottom of the full static column of oil. Although an abundance of gas was available at the start of operations, air was injected in the sand for 10 days through a well which had been a regular producer, but which was temporarily killed in order to serve as an input well. The input well was surrounded by eight producing wells, four of them being direct offsets and the other four diagonal offsets.

A two stage portable compressor served to inject the air into the sand and the meters showed that a total of 770,000 cubic feet of air had entered the sand during the first 10 days. The input pressure required was 165 pounds. The air was then discontinued and residue gas was returned to the sand during the remainder of the test period.

Results of Preliminary Tests

Increases in production of the surrounding wells were observed on the sixth day following the start of operations. The casinghead gas from the surrounding wells was analyzed for air during the next 40 days. The air appeared in six of the wells in a highly diffused state, which was indicated by the fact that the air content of the gas did not exceed 4 per cent at any time during the 21 days that it was present as a component of the output gas. The air made its first appearance 14 days following the start of operations and disappeared 35 days after the start. There was no evidence of "channelling" and the ratio did not change from that of of the normal pre-testing period. The input air and gas entered the sand during the period April 7 to May 5, 1927.

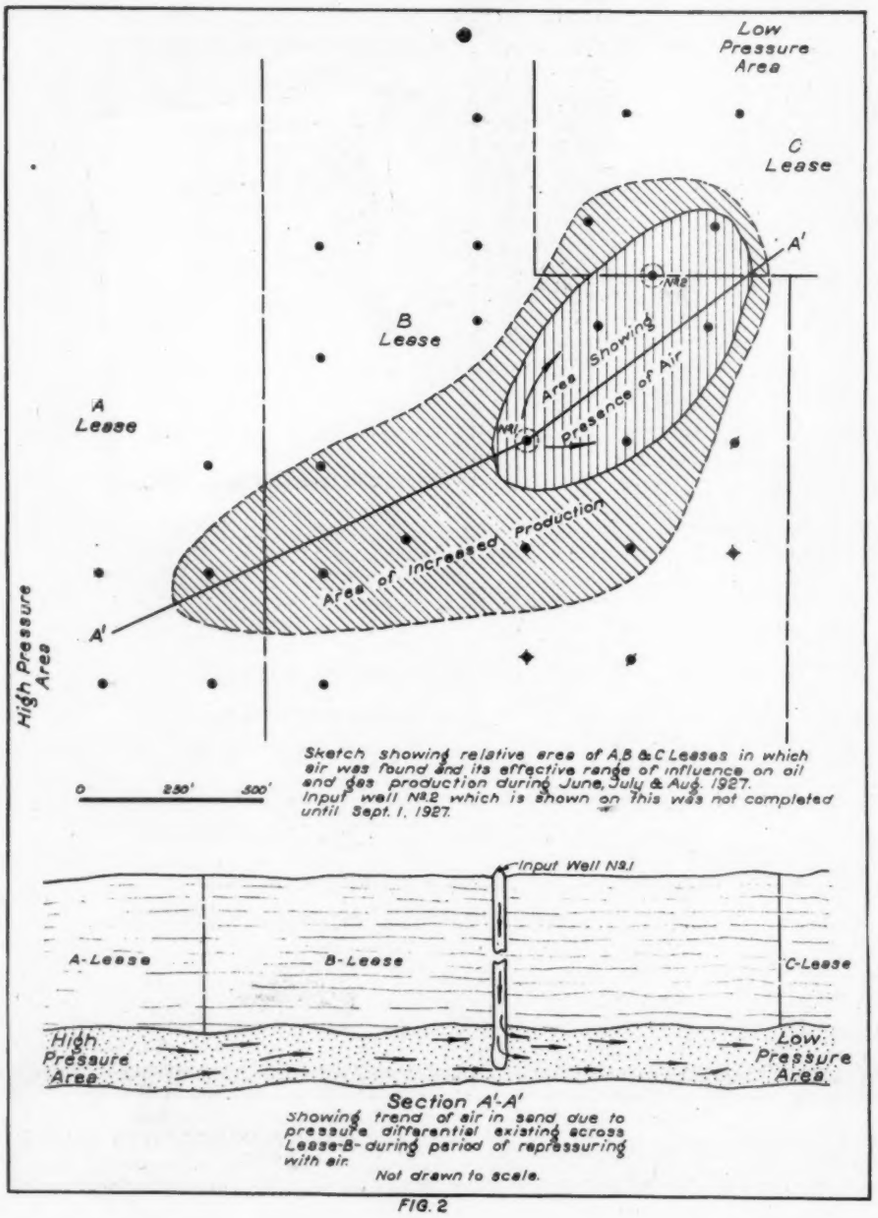
Low Pressure Area
C Lease
B Lease
A Lease
A'
A'
No2
No1
Area Showing Presence of Air
Area of Increased Production
High Pressure Area
0
250'
500'
Sketch showing relative area of A,B & C Leases in which air was found and its effective range of influence on oil and gas production during June, July & Aug. 1927. Input well No.2 which is shown on this was not completed until Sept. 1, 1927.
Input Well No.1
A-Lease
B-Lease
C-Lease
High Pressure Area
Low Pressure Area
Section A'-A'
Showing trend of air in sand due to pressure differential existing across Lease-B- during period of repressuring with air.
Not drawn to scale.

FIG. 2

Permanent Equipment.

Following the preliminary work, a permanent plant was installed in July which is capable of handling 4,500,000 cubic feet at the required pressures to return the residue gas from a casinghead gasoline plant to the sand. This plant started operations on July 13, 1927, and has been in continuous operation since. The compressor equipment, together with field lines, meters, etc., represents an investment of $80,000. This equipment is the joint property of Roeser & Pendleton and the Marland Oil Company, whose properties produce nearly 95 per cent of the production from this pool. This plant also delivers gas for repressure purposes to the Humble Oil & Refining Company's 80-acre lease.

The compression plant during the prorate period handled an average of 1,050,000 cubic feet per day and distributed it to the input wells through 14 volume control orifice meters. The average daily wet gas production from the pool during the prorate period was 2,900,000 cubic feet.

Method of Operations

On account of the ownership status of the leases in this pool being similar to that where unit control prevails, the greater portion of the production has been shut in since May, 1927, the lease line wells and those which are in the zone of water encroachment being the only ones from which production has been extracted at normal capacity, the remaining wells being produced at not more than 30 per cent of their normal capacity during this period. As a result of being on a prorate basis while being repressured, it is difficult at this time to forecast the effect of repressuring on the ultimate recovery from this pool, but the observations that have been made are indicative of a degree of success that promises to recognize repressure operations in flush pools as a forward step in production methods.

In January, 1928, during two periods of brief duration, there were two 80-acre leases subjected to unrestricted production tests. Both of them showed a 25 per cent increase over the rate of the last former unrestricted production which was gauged before the proration plan was adopted. The duration of these tests was four days on one lease and seven days on the other. There was no evidence of gas "channelling" during

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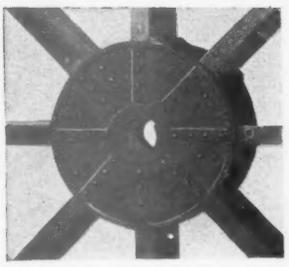

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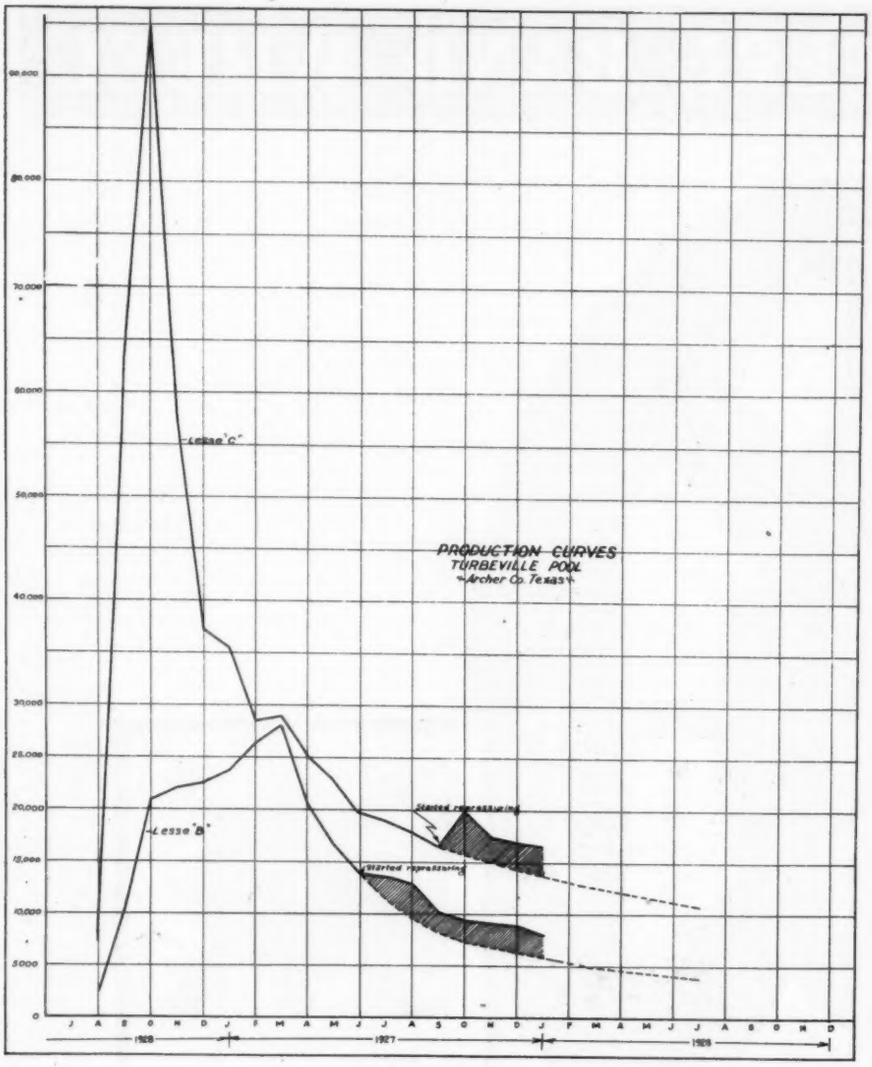

FIGURE 3

this test. During the period July 13, 1927, to January 15, 1928, there was a total of 185,000,000 cubic feet of residue gas returned through the 14 input wells. This represented 38 per cent of the total wet gas production for the same period. The pressure required to return this gas to the sand varied from 60 to 170 lbs. The initial rock pressure of the Cook Pool is not known, but was probably around 250 pounds.

Back Pressure Control

Several methods were tested out as a means of controlling the gas-oil ratio, which, at times, became so high that it threatened the success of the entire project. Tubing levels were raised progressively to allow a fluid column to constantly remain against the sand and act as a back pressure, but this was not satisfactory, for two reasons. First, while this insured a column of oil against the sand, the variations in the weight of this column in small wells due to pumping off, often unbalanced the pressure equilibrium at the bottom of the well and the gas would break through and become difficult to control. Second, it was not considered good practice to follow, in cases where bottom water was being produced with the oil, as the water would tend to concentrate in the lower part of the well and constantly cover the sands. A liner with a packer which forced all gas and oil to first go downward to the bottom of the hole before its escape into the casing was also tried as a means to reduce the gas-oil ratio, but was unsatisfactory. Finally, it was decided to leave the working barrel at the normal position above the top of the sand and adjust the length and speed of the stroke in such a manner that the producing formation would never be uncovered, but there would always be fluid at a sufficient elevation above the top of the sand to constantly maintain the desired pressure. The plunger displacement was adjusted to that point which was observed to give the lowest gas-oil ratio consistent with the production obtained. This method has been previously tried as a remedy for troubles in the repressure work in the Tubeville pool, where it gave instant success, and when likewise applied to the Cook pool, it was equally successful.

Rod line multiplier posts are being installed on all wells which permits the adjustment of the plunger displacement to a very fine degree. In cases where the wells are small, a working barrel of small diameter is used. This method enables the operator to obtain a remarkable stability of pressure conditions in the sand and a positive control of the movements and distribution of the gas through the sand. After the proper speed and length of stroke for a week is determined, it requires little or no further attention.

Conclusions

The observations and results of the repressuring operations which have been in progress during the past eight months in the respective pools described in this paper, strongly support the following conclusions:

1. The repressuring of producing sands during the flush stage of production is the only method by which water encroachment can be retarded to any appreciable degree. Maintaining high back pressures without repressuring may prevent local "coning" of bottom water, but will not retard progressive encroachment.

2. The flush stage is generally the only time during the producing life of the pool when an adequate supply of cheap gas is available for return to the sand. Air, which is always available, cannot be used in some cases, due to its corrosive action.

3. When repressuring permits the pumping of wells under moderate back pressures as in the case of the Cook pool, a large quantity of dissolved gas remains in solution in the oil until after it has reached the well. This results in a lower viscosity of the oil and therefore, higher ultimate recoveries.

4. The use of wet gas is an advantage over dry gas, especially when repressuring at low pressures, due to its higher solubility in oil than dry gas under these conditions.

5. Fewer wells will be required to recover the oil from any unit area when that area is subjected to repressure operations during the flush stage.

6. It is proven beyond all doubt that conservation of gas energy in any producing sand increases the ultimate recovery from that sand.

7. The repressuring of producing sands during the flush stage of production offers a method by which true conservation may be applied on a dividend paying basis.

California Banquet

Los Angeles—The attendance at the annual banquet to be given March 8 by the Chamber of Mines and Oil promises to break all records, according to officials of the chamber, who are expecting a crowd of more than 1100 oil men from all parts of the State. Invitations recently sent out were printed in Old English and have elicited much favorable comment. The Wildcats, entertainment committee of the chamber, have arranged an elaborate program. The banquet will be held at the Ambassador Hotel at 7 p.m., and will be informal.

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Developments in Air-Gas Lift in the Mid-Continent

(*Continued from page* 38)

Continent area. Some companies are using it almost exclusively, except for wells with very large potential production. Straight strings of tubing are still used to a limited extent, but in nearly all cases where wells flowing through straight tubing have been changed to graduated tubing, a material reduction has been obtained in both the pressure and volume required There is not often any change in production that can be attributed to changing to graduated tubing. Many companies are still flowing through the annular space between the tubing and casing, even for the smaller wells. While such a practice may require a larger volume than flowing through tubing, the pressure is usually lower and the ultimate lifting cost essentially the same, except on wells with small production. Most compressor equipment throughout the fields is designed for much higher pressures than are ordinarily required, and therefore if the volume can be reduced by flowing through tubing, a saving in equipment usually results, even though the efficiency is not changed. Flowing through tubing invariably imposes greater pressure against the sand than flowing through the annular space between the tubing and casing. When flowing through the tubing the friction loss of forcing the gas down through the annular space between the tubing and casing is negligible, and the pressure shown at the casing head is, for all practical purposes, the pressure at the bottom of the tubing. Where gas is forced down the tubing there is a material friction loss which on a large volume may amount to over a hundred pounds. It is sometimes desirable, however, to maintain this higher pressure on the sand to reduce the natural gas. This is practiced in connection with gas-lift work in the Panhandle, parts of West Texas, and to a lesser extent in other areas.

Determination of the size of tubing which shall be used in a well, and where graduated strings are used, the amount of each size to be run, are as yet individual problems. They are calculated or estimated in as many different ways as there are different engineers to calcualte them. There are, however, certain principles upon which the calculation should be based, and engineers are in general accord on these. More detailed data are being obtained and better understanding of the action taking place in each installation, so that more and more installations are made on engineering basis rather than by comparison with similar wells.

One company in the Seminole field is making a practice of flowing up through casing run for this purpose, which permits cleaning out, swabbing or other work to be done on the well without interruption of production. The pressure necessary to hold against the sand is reduced because of less flowing friction through the large pipe, but the casing-head working pressure may be high because of greater friction loss in forcing the gas through the small area between the two strings of casing to the point of injection into the oil column. Another disadvantage is that the point of injection of gas into the oil column cannot be changed. Where tubing is used, it can be lowered as far as necessary to obtain maximum production, which is sometimes several hundred feet above the sand. Placing the tubing below this point will increase the working pressure without increasing the production, and also frequently increases the natural gas-oil ratio.

Large Flow Strings.

Some further work has been done on the use of large flow strings for air-gas lift work* and has given some encouraging results. While the volume required is much greater than the more common sizes of flow strings, the pressure can be reduced low enough to use single stage compression. The volume of natural gas is usually materially reduced, but this may not result when used during the earlier life of a well. One installation in Northern Oklahoma is now lifting 400 barrels form 3000 feet with a working pressure of 45 pounds.

Automatic kick-off valves to reduce the starting pressure are availablee in several designs, most of them depending on a differential pressure between the inside and outside of the tubing for the operation of the valve. One design is operated by means of a wire from the valve to the surface and another by the velocity of the gas through an opening. There are several of these valves in use in the Garber, Oklahoma, field and the Gulf Coast fields, but their general use is not common. In most areas the equipment is capable of withstanding the starting pressures required, and therefore there is no particular demand for these valves. Some trouble has occasionally been caused by running one of these and having it fail to operate properly, and one failure on a well of big potential production will make any operator hesitate to try again any piece of equipment for that purpose. While the use of automatic kick-off valves at the present time is not common, improved designs may be expected which will bring them into more general use, particularly where high starting pressures are required.

Recent experiments have been conducted in lifting oil by means of a series of gas lifts within the well, the principle of which is identical with the stage lift which has been frequently applied to lift water from deep mines. The design for oil well pumping requires three strings of smaller pipe run inside of a larger size. At regular intervals a special coupling is installed, each of which is the beginning of another stage of the lift. Two of the small pipes are eduction pipes and the third a vent pipe for venting the gas spent in lifting the oil through the lower stages. In the operation, gas is introduced through the first coupling into one of the lift pipes, to raise the oil through the second coupling to the bottom of the third coupling where it is discharged, the oil falling back to the second coupling and the gas going up the vent pipe. More gas is introduced through the second coupling to lift the oil through the other lift pipe, through the third coupling to the bottom of the fourth coupling where it drops back to the third to be picked up again, the gas going into the vent pipe. This process is repeated until the oil reaches the surface, all of the stages working simultaneously.

The stage lift may be operated by the gas produced with the oil by holding sufficient pressure on the casing to operate the lift, or may be supplied by a compressor. The pressure required depends on the distance between the couplings. This is usually about 35 pounds when the couplings are placed some 65 feet apart, and proportionately greater for longer lifts. There is little to be gaineed by placing the couplings closer, as the additional volume of gas which must be vented imposes a higher pressure on the lower part of the vent pipe, which in turn requires a higher pressure to be maintained in the casing to operate the lift. In case extraneous gas from a compressor is to be used, the gas is introduced through one of the smaller pipes and the spent gas vented through the annular space between the tubing and casing. The volume of gas entering each stage of the lift is controlled by an orifice. Because of the small size of the pipes and numerous aerations in the process of the lift, paraffin is more troublesome than in other methods of pumping. On the whole, it is promising as an economic method of lifting where conditions are favorable for its operation.

Sentiment in favor of compressor plants for gas lift, gasoline extraction, repressuring, and gas line boosting is gathering force, and the near future will porbably bring a different operating policy for some of the present

*Foran, E. V., Mechanical Installations of Gas Lift, American Institute of Mining Engineers, Petroleum Division, October Meeting, 1927, Fort Worth, Texas.

plants and new plants which will be built.

Most operators who are now lifting oil by means of air or gas lift are studying their individual operations closely, not only that the individual wells may be operated as cheaply as possible, but also to obtain data which will assist in establishing general principles governing the lifting of oil by this means. One of the most promising fields for the application of gas lift principles is in wells flowing naturally. Little has been done toward designing the size and arrangement of tubing in order to prolong the time that a well will flow by means of its own natural forces. The most common practice in the Mid-Continent area is to complete the wells with 6⅝ or 5 3/16-inch casing for the oil string. The well is permitted to flow through this as long as it will, then tubing is run either to obtain further natural flowing or for flowing with compressed air or gas. In many wells if the flow string were designed as carefully as the tubing in an air or gas lift installation, natural flowing life could be materially prolonged and lifting cost reduced.

The present tendency is toward operating wells with smaller production by means of air or gas lift. While for constant operation of pumping that method is more economical than most gas lift operations lifting the same amount of oil, the loss in production due to shutdown time and extra labor incident to frequent pulling of rods and tubing put the air-gas lift in strong competition with pumping in many wells because of its consistent operation. Improved methods of air-gas lift which are being made and will be made will bring this method in even stronger competition with plunger pumps, especially in the deeper wells. And the present trend of oil-field development is decidedly toward deeper wells.

Bakersfield, Cal.—The Bakersfield Oil Company, controlled by local capital, has located a well in the northeastern part of this city and will begin drilling operations as soon as the necessary rotary equipment is installed. The new location is about three and one-half miles south of the Kern River field and three miles north of the Pacific Eastern Production Company's Union Avenue wells. The laws governing the drilling of wells are very liberal in this city, it being necessary only to obtain a building permit signed by a majority of the residents within a certain radius of the location. The new company controls more than 160 acres near the location.

Casper, Wyo.—The Texas Corporation and the Texas Production Company entertained about 300 company employes from all over the Rocky Mountain area. Prizes were awarded to production department men for records established. General Manager Judge F. W. Freeman and Superintendent of Operations A. B. Patterson of the Denver offices made speeches on the occasion.

Cullinan Wants Dictator For Industry

New York—Urging that a dictator with the "powers of a Mussolini" be appointed for the petroleum industry, J. S. Cullinan recommended for such a position Secretary Hoover, General Pershing, Julius Barnes or Edward N. Hurley. In his interview Mr. Cullinan spoke of these men as gentlemen in whom the American public has confidence.

"What the petroleum industry needs badly at this time," said Mr. Cullinan, "is a Moses to lead us out of the wilderness in the form of an association which will study all phases of its problems and the factors that enter therein. Such an association would represent every branch of the industry and allied activities without regard to size and be uninfluenced by any particular branch of the industry or by corporations or individuals whose first consideration is serving their own ends.

"Attempts heretofore to perfect such an organization have failed. And serious effort that is now undertaken should as a first step see to it that the man who is placed at the head of such an organization has no personal interest in the industry and accordingly no corporate or individual interest to further or project.

"With such a man," continued the speaker, "and association heartily co-operating with the Federal Oil Conservation Board, and like national and State agencies with definite American policy determined and thereafter adhered to, improvement should be reflected promptly and the industry as a whole restored to a permanently sound basis within the near future."

The important place which petroleum and its products hold in present-day industrial activity was summarized by Mr. Cullinan when he said, "In my deliberate judgment, our form of civilization would be eliminated and a large part of the other 90 per cent of the nation's wealth would be worthless within a year after petroleum was exhausted unless a presently unknown substitute were developed.

"It may be further pertinent," he emphasized, "to mention that economists estimate that the world has drawn more from its natural resources within the 60-year period since the civil war than in the 1800 odd years since the beginning of the Christian era, a point that should not be lost sight of in connection with our boasted prosperity.

"It is a tendency that unless reasonably controlled may lead to the oblivion of the Maya, the Toltec and the Aztec civilizations previously inhabiting the Americas, causing the fittest of our descendants to find it necessary to trek back to the teepee and the pueblo."

Mr. Cullinan's interview was given out Thursday, following his resignation as president and director of the American Republics Corporation, which he has directed since 1916, when he established it. He stated that he plans to spend a great part of his time in trying to work out solutions for problems of the oil industry including not only those of the United States, but other countries as well. He said that these problems have become international in their scope, and unless met promptly they may lead to numerous complications.

Standard of California Erecting Air Beacons

Los Angeles—The Standard Oil Company of California announces that at the suggestion of the United States Department of Commerce it will immediately install a high intensity long range aerial beacon light for the guidance of aviators in Southern California. The light will be placed in the Merced Hills, just north of the town of Montebello, on the property of the Standard Oil Company.

The light will have lense and reflector 36 inches in diameter and will develop 10,000,000 candlepower. It is estimated that under favorable conditions a light of this power can be seen by a flier for more than 100 miles. The site was selected by Lieut. J. P. Worthington, field representative of the Airways Extension Division of the Department of Commerce. The light will surmount of 75-foot steel tower and will revolve six times per minute. A similar light will be placed on top of Mount Diablo, which overlooks San Francisco Bay.

The Department of Commerce will give the Montebello light the insignia "SL," signifying "Standard-Los Angeles," while the light in the north will be called "SD," standing for "Standard-Diablo." So that aviators may identify the lights, these code letters 12 feet high will be hung on the side of the tower and will be outlined in neon lights. These neons will flash six times per minute.

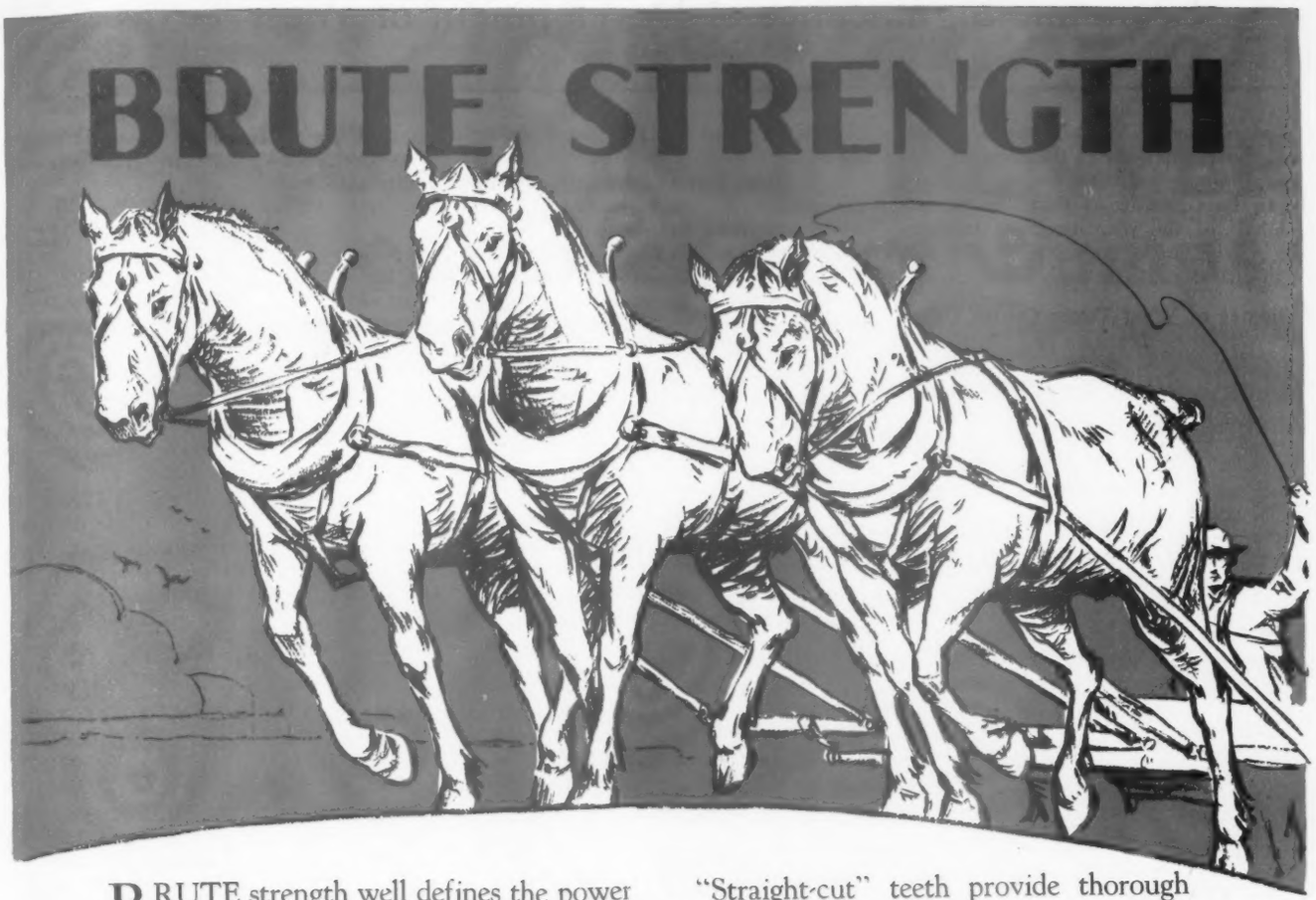
The two lights form an important addition to the series of lights which the Department of Commerce is placing on the airways between Los Angeles and San Francisco, and from San Francisco eastward and northward.

Wildcat Gasser

Santa Barbara, Cal.—The Barnsdall Oil Company has completed Edwards 2, a semi-wildcat, near the Goleta field, with a production of 2,500,000 cubic feet of gas and a small quantity of light oil. The well was drilled to 2455 feet. Edwards 2 is the second well drilled in what promised to be a western extension of the Goleta field. Edwards 1 was first rated as a commercial well, but the same conditions seemed to prevail in the extension as were early evident in the main Goleta field. The water problem was never solved. The gasoline content of gas from the new well is low and does not indicate a large production anywhere near the location.

J. W. Lowes, formerly with the Joseph Reid Gas Engine Company, has recently taken a position in the sales department of the Young Engine Corporation, Canton, Ohio.

BRUTE STRENGTH



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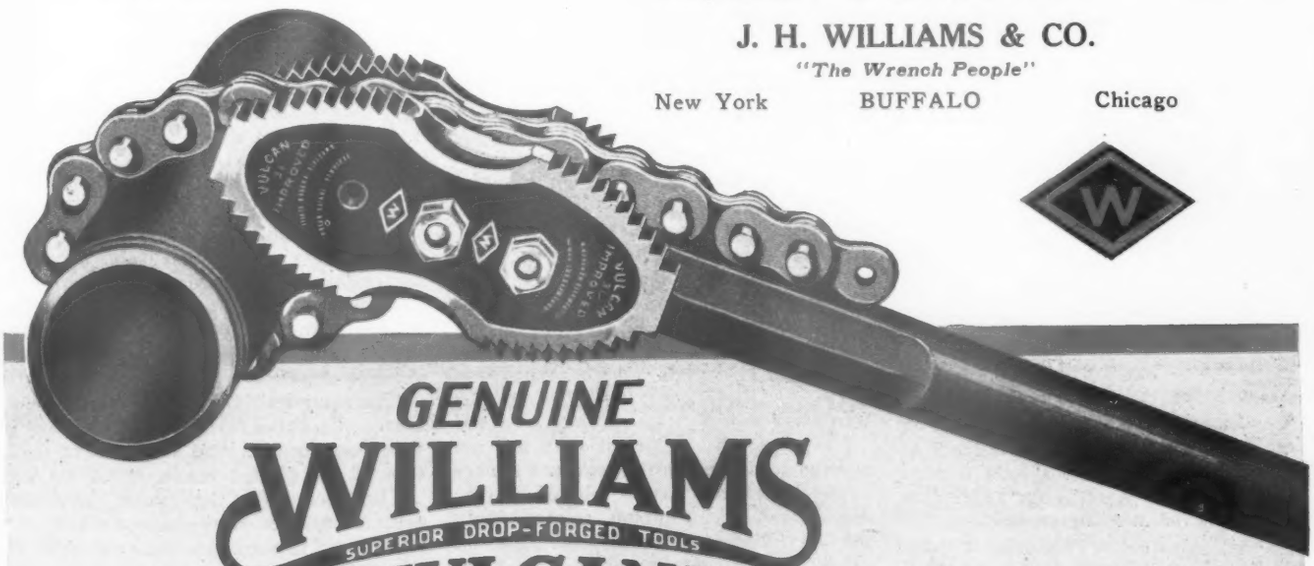

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Economic Significance of Development of West Texas

(Continued from page 32)

The volume of West Texas oil reaching primary markets is therefore limited to approximately 310,000 barrels daily for the first six months of 1928. In the second half of the year increased facilities will provide an additional estimated outlet of 50,000 to 70,000 barrels daily.

Influence of West Texas Oil on Other Markets

There can be no denial of the market influence created by a series of producing districts whose potential possibilities, although measured by new standards, have some basis of calibration. The producing areas of West Texas are found superimposed on more or less parallel structural features 50 or more miles in length. On these definitely established trends, notwithstanding the vagaries of structural geology, one or more additional fields of magnitude may be assumed. A development, at present limited in its economic importance, strongly suggests the future exploitation of sand production along the flanks of the Winkler County "high." The Llano-Roxana and Texas Rhoades wells, the latter in southeastern Lea County, New Mexico, offer the most logical explanation of this occurrence of oil. A broad consideration of the future possibilities of the Permian Basin inclines a thoughtful person to the belief that perhaps under such conditions as are in existence an active agency towards stabilization has been created and that the oil resources of this area will reach useful application in orderly amounts.

Values

The posted price in the field for all grades of West Texas crudes, except Big Lake, is 60 cents per barrel. Transportation costs for the movement of this oil, the bulk of which is afforded an outlet to primary markets through Gulf Coast ports, are shown to be:

Pipe Line (gathering and delivery charge), 48 to 55 cents.

Tank Car (includes car rental[1]), 60 to 78 cents.

BASE RATES

Origin	Destination	Cost Per Bbl.
Oklahoma	North Atlantic Ports	0.7675[2]
West Texas	North Atlantic Ports	0.6500[2]
Panhandle	North Atlantic Ports	0.8000[2]

TANK CAR RATES

		(Approx.)
West Texas	Texas Gulf Ports	0.6000
Oklahoma	Texas Gulf Ports	0.5580
Panhandle	Texas Gulf Ports	0.6200

A comparison between the costs of West Texas crudes and Seminole crude at North Atlantic ports is considered of sufficient interest to warrant the expression of values as indicated herewith:

	Seminole	W. Texas
Field price	$1.36	$0.60
Transportation[3]	.7675	.65
	$2.1275	$1.25

The lower rate for West Texas crude is created by unseasonably low water rates from Gulf Coast ports to North Atlantic ports.

Competitive factors have determined the differential at which new supplies of crude will move in competition with oil from established fields close to sources of consumption. Based on the results of an investigation by the Federal Trade Commission, this differential for Panhandle oil has been estimated to be approximately 35 cents per barrel. The physical properties and characteristics of West Texas crudes have rendered the utilization of this oil adaptable only in special types of equipment. Small plants designed to operate on less refractory types of crude oil have found that treatment of West Texas oils carries with it an excessive penalty for depreciation. Restriction, in the future, to plants especially equipped to process this oil is a warranted conclusion which, however, does not reflect tendencies toward greater utilization justified by assurances of a large supply. The answer to the question "What influence will West Texas have on the price structure" involves many considerations and variable factors. Some, however, may be treated in broad outline and include:

1. Large supply of oil available for future use.
2. Differential of 20 to 30 cents per barrel due to presence of sulphur compounds.
3. Extraction of 22 to 28 per cent gasoline, high in anti-knock compounds, through straight distillation and a maximum of 32 to 38 per cent gasoline extraction through atmospheric and pressure distillation.
4. Improved refinery technique allowing treatment of "sour crudes" at lower costs.
5. Use of "sour crude" restricted and limited to special equipment.
6. Volume restricted in 1928 by pipe line facilities.

Mid-Continent crude oil of similar gravity to crude oils from the Yates, Hendrick and Church-McElroy fields—30 to 31 A. P. I. has a posted price of $1.16 per barrel as compared with 60 cents per barrel for West Texas. The value of these oils at Gulf Coast and North Atlantic points is as follows:

	Gulf Coast	North Atlantic
Mid-Continent 30-30.9 Gr.	$1.70	$2.12
West Texas 30-31 Gr.	1.25	1.55

Unfortunately, sufficient data are not at hand to determine the relative refinery value of various crude oils of similar specifications at common points. With the less variable factors of crude oil prices and transportation rates to common points, comparative values indicate that an equilibrium may be assumed and that reductions in price of West Texas crude will result in the greater encroachment of markets at present denied "sour crudes."

Typical skimming plant operations on several grades of West Texas crudes and one sample of North Texas sweet crude based on Fort Worth markets indicate results as follows:

VALUES

	North Texas	Reagan County	Winkler County
Gasoline	$1.05	.957	.52
Kerosene	.22	.034	.13
Gas oil	..	.170	..
Fuel oil	.50	.319	.73
	$1.77	$1.480	$1.38
Freight	.375	.50	.54
Refining expense	.15	.15	.20
	.525	.65	.74
Refining value	1.245	.83	.64

Summary

1. To January 1, 1928, the Permian Basin had produced a total of 76,753,000 barrels from 45,764 proven acres and 1168 wells.

2. Estimates of future production from explointed fields are distributed as follows:

	Barrels
Yates	325,000,000
Church-McElroy	180,000,000
Big Lake	65,000,000
Hendrick	120,000,000
Miscellaneous	25,000,000
Total	715,000,000

3. Outlet to primary markets through pipe lines and tank cars for the first half of 1928 will not exceed 310,000 barrels daily with a maximum of 400,000 barrels per day by the end of 1928.

4. Costs of transporting this oil to Texas Gulf ports are 48 to 55 cents through pipe lines and 60 to 68 cents by tank cars.

5. Drilling costs vary between $12,000 in the Yates field and $35,000 in the Hendrick field.

6. Production expenses in the field for one group of properties have varied between 3 cents per barrel during flowing stages and 10 cents per barrel during pumping stages.

7. Extensions to the Hendrick field and evidences of a new field north of the Church-McElroy are the most significant developments at present.

The volume of West Texas crudes competing with sweet crudes is, at present, limited to outlets and plants equipped to treat these sour crudes.

Additional costs involved in rendering refined products, derived from sour crudes, sulphur free, impose additional refining expense.

"Sour crudes" from West Texas and Panhandle fields furnished approximately 9 per cent of the total crude oil production of the United States in 1927.

The increasing importance of these areas as sources of production which has been found to contain a higher percentage of sulphur compounds than other oils, assures the refining industry of future supplies to warrant the necessary changes in equipment.

Prices for these crudes will be a function of demand at present restricted and defined. Processing this oil will require fundamental changes in equipment and plants.

[1]Rates are based on export shipments to foreign and Atlantic Coast ports.
[2]Does not include gathering and delivery charge.
[3]Does not include gathering or delivery charge.

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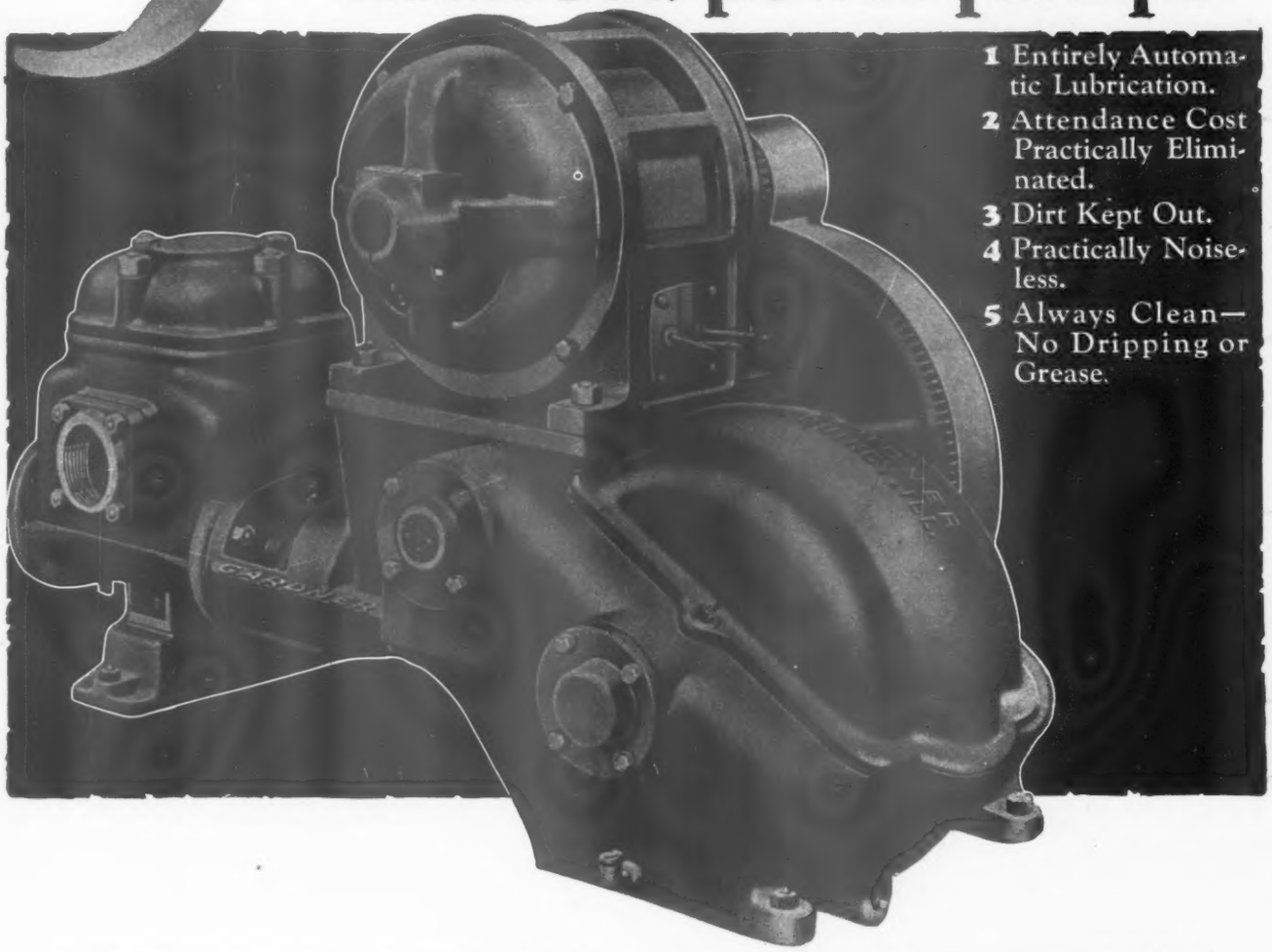

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Salt Water Shows in Palmer Well In Carterville District

SHREVEPORT, La.—The majority of fields in North Louisiana benefited from the recent revision of crude oil prices which made increases on grades testing above 36 gravity.

Salt water in the Palmer Corporation's Roberson 1, in section 26-23-12, Carterville district of Bossier Parish, is taken to indicate that this well is but a repetition of previous completions in this area. When first completed, the Roberson well was believed to have found more favorable oil production for this area, but after being cleaned to bottom and liner set at 3068 feet, bailing yielded a large percentage of salt water. Several hours of bailing would not lower the fluid more than 300 feet from the top of the hole, and later it started flowing by heads, making about 2000 barrels of fluid, only 5 to 10 per cent of which was oil. Arrangements are being made to pull liner and take a core from the bottom of the hole.

Completion of a 200-barrel flowing well on the Simplex Oil Company's Baird lands in section 22-20-15, Shirt Tail Lake area of Caddo Parish, has brought some attention to this section. A number of good producers have been brought in in this field during recent months, although no great amount of drilling has been done. Production is found at 2225 feet, usually 50 to 100-barrel pumping wells. Simplex Oil Company's Baird 2, in the northeast corner of the section, is the largest well yet completed and has led to the belief of possibilities of more prolific production from further drilling.

Little drilling is under way in the Pine Island Trinity sand area, following unfavorable showings from such activity. Dixie Oil Company's Huckaby 4, section 11-21-15, is drilling below 3950 feet; Robertshaw 81 and 92, section 13-21-15, both below 4000 feet. Haynes Brothers' Spell 1 and 2, in section 15-21-15, are both shut down pending further developments. Spell 1 was tested at 3911 feet and Spell 2 stopped at 3092 feet. The Spell wells are on acreage adjoining the tract upon which was drilled the record Murray well. Magnolia Petroleum Company is drilling at 3888 feet in Robertshaw 22, section 23-21-15, and will probably test the 3900-foot sand during the week. Pittsburgh Oil & Development Company has set casing at 4010 feet in Herndon 1, section 15-21-15, and will test. The Texas Company is to set tubing in Noel B-13, section 14-21-15, at 3979 feet, and has a fishing job at 4457 feet in Raines 19, section 15-21-15.

Tests made during the week further weakened the possibilities of the Champagnolle field, in Union County, Arkansas, ever becoming a commercial proposition. E. M. Jones will abandon Crain 3 at 4014 feet. This test is in section 2-17-14, the location of the original discovery for the area. This failure practically condemns possibilities of deeper production in this part of the field. Magna Production Company's Rowland 1, section 14-17-14, flowed 100 barrels of oil when tested at 2999 feet, and is the best well yet drilled in this vicinity. Pure Oil Company's Gregory 1, in 10-17-14, made five million feet of gas and a spray of salt water from 2630 feet. Dr. Rushing et al, drilling in section 11-17-14, got salt water at 2740 feet in Gregory 1, and Gregory 2 is drilling below 1700 feet. Despite the apparent failure of the area, new locations were announced during the week. Rhodes, Trustee, will drill on Union Saw Mill lands in section 14-19-11, and Timberlake et al are to start at once on a test in the northwest corner of section 11-17-14.

More attention is being directed to deep tests being drilled throughout the State than to the few shallow wildcat wells, that occasionally demand attention. The Dixie Oil Company's Jenkins well, in section 9-12-11, De Soto Parish, is drilling at 6103 feet, and is being watched with interest. Humble Oil & Refining Company's Bliss and Weatherbee 30, deep test in section 15-19-11, Bellevue field, Bossier Parish, is another that is creating considerable comment. The deep producer of the Woodley Petroleum Company in the Cotton Valley field, in section 23-21-10, which was recently tested at 4737 feet, at which time it flowed a small amount of very high gravity oil, supposedly from the Trinity sand, is now shut down at 4512 feet, having been plugged back in an effort to exclude a flow of salt water that developed after the well was tested. This well should be tested again soon.

Edwin J. Forrest et al's Perritt wildcat, section 11-17-6, Bienville Parish, encountered the top of the Blossom sand at 2997 feet, and preparations are being made to make a test of a broken formation, showing a trace of oil, and a good showing of oil that was had below a cap rock near the present total depth of the hole, 3045 feet.

Sweet Grass Hills

Great Falls, Mont.—The third proof of a new producing territory has been established in the same well in which the first and second proofs were made. The Sunburst Oil & Refining Company's Flat Coulee well in the Sweet Grass Hills, two miles south of the Canadian boundary, immediately north of the east end of East Butte and 35 miles north of the town of Chester, has found oil in a 27-foot member of the Ellis series where heretofore only gas has been found. Two shallower sands have been productive of oil, and one has commercial gas. This well has definitely established the Sweet Grass Hills area as being oil-producing. Considerable importance is attached to this new area which promises to be one of the most interesting in Montana.

Location for Test on Salt Valley Anticline

Salt Lake City, Utah—Utah Southern Oil Company's location for the test on Salt Valley anticline, 20 miles north of Moab, has been made by H. W. C. Prommel, consulting geologist of Denver, and J. L. Dougan, superintendent of the Utah Southern, and is tentatively spotted on southwest 18-23-21, on the Kendrick Levi permit. This will be a test of the salt dome theory and is therefore located on the flank of the structure. The location may possibly be changed slightly as it is possible that some geophysical work will be done before the definite location is chosen.

Union Oil Company of California has announced that it will start its second test on Lisbon Dome, 40 miles southeast of Moab. This well will be located on the flank of the structure and will be another test of the salt dome theory.

According to an announcement made last week the Crescent Eagle Oil Company has closed a deal involving 800 acres of land on Crescent Dome with a Pennsylvania operator. It is said that the Eastern company will make a thorough test of the oil and potash showings which were encountered in the Crescent's No. 1 well.

The Mid-American-Arrowhead Petroleum test is reported to be drilling below 1300 feet at Bloomington dome, near St. George. The objective sands are expected at 1400 feet or thereabouts. Gas flow became ignited by flames from the forge and caused the rig to be burned somewhat before the fire was extinguished.

Beehive Dome test, near St. George, is reported drilling at 225 feet. Diamond Oil Company's well in Diamond Fork canyon, No. 3, is drilling below 200 feet. Maude Ellen Oil Company will drill a test in Dog Valley, southeast of Vernal and is moving in equipment.

Casper, Wyo.—A test which is creating a good bit of interest in Central Wyoming this season is that which is starting on the Spindletop structure, southeast 32-30n-81w, in Natrona County. The Spindletop Syndicate No. 1 is the operator. Shallow production in this location will be expected in the Sundance formation at 1000 feet or thereabouts, and in the Embar at 2300 feet. Wells were drilled on this structure several years ago, and both sands mentioned showed production. However, at that time the drilling operations were being carried on with an idea of securing gas production, and the oil findings were ignored.

Casper, Wyo.—A California syndicate, headed by J. M. Botts of San Francisco, has taken over some 13,000 acres of land in the Red Bill district, in Goshen County, where it is expected that a test will be started as soon as weather conditions are favorable. Location for the test is being selected by B. M. Edwards, a Denver geologist.

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Mountain States Field Development Notes

Kevin-Sunburst's Biggest Well Breaks Loose

Great Falls, Mont.—A loss estimated at not less than 10,000 barrels of crude petroleum has been suffered by the owners of the Baker-Barnhill-Corey Barger 1 well, in the Kevin-Sunburst pool, which has repeatedly broken its control-head and flooded the surrounding territory with oil. The well was completed months ago in what appeared to be a water sand. It was pumped steadily for 80 days and then started to produce 200 to 250 barrels of crude. Two weeks ago it blew out the tubing and for several hours produced at the rate of 18,000 barrels per day. It was brought under control and pinched in to a production of 3000 barrels. On February 17 it broke loose again and was quickly controlled. Three days later it was again on the rampage and is now controlled through a six-inch stream to about 4000 barrels per day.

This is, without doubt, the largest producer ever to be completed in Kevin-Sunburst. Its production is being cared for at the International Company's plant at Sunburst.

In the immediate vicinity of the producer two new wells are to be drilled immediately by the Baker-Barnhill-Cory interests.

Oregon Basin Well Not Up to Expectations

Cody, Wyo.—The discovery well in the Oregon Basin field which was completed many months ago by Ohio Oil Company and which was supposed to be capable of producing from 1000 to 21,000 barrels of black oil, has proved a great disappointment to all prognosticators in Wyoming. The initial production of the well, opened up several days ago, was 447 barrels. It has decreased steadily since it was opened up and it is the company's intention, at present, to clean out the hole of any cavings which have encroached during the long time the well has been shut in since its completion. It may be that this work will bring back the initial production which was, without doubt, much more than 447 barrels a day.

Since completion of the discovery, however, two more wells have been completed, both of which are commercial and both produce about 600 barrels per day while being drilled in. Boom conditions in and around Cody are decidedly manifest.

The Ferdig interests (Cody Petroleum Company, Ferdig-Wyoming Oil Company, Yellowstone Petroleum Corporation, etc.), will lay a pipe line from the field to railhead at Cody, provided they are granted a permit for which they have applied of the State public utilities commission. Such a line would cost approximately $200,000 and would be the second serving the field, the Illinois Pipe Line Company having completed such a line several months ago. The Ferdig interests also will build a refinery at Cody, or at Laurel or Billings, Montana. The latter two towns are considered favorably because of their being on the Great Northern Railway. The construction of the plant depends to a great extent upon the action of the Interstate Commerce Commission in effecting a further reduction of freight rates on crude petroleum and its products from Cody. Initial charging capacity for the refinery would be 10,000 barrels.

Will Drill 10 Gas Wells in Sweet Grass Hills

Great Falls, Mont.—The Patterson-Brown interests will drill 10 gas wells in the Sweet Grass Hills area for the proposed development of 200,444,000 cubic feet of natural gas. All of the wells are to be completed by July 1. The original contract for gas well drilling was for five wells, but it has been announced that in all there will be 30 wells drilled, 10 of which will be started and completed as soon as possible. Several months ago announcement was made that plans were under consideration for the eventual piping of natural gas from Northern Montana, via Great Falls, to Helena, Butte, and Anaconda. At that time the financial interests identified with the laying of the company's line into Great Falls (Hope Engineering & Supply Company), made a preliminary investigation into the feasibility of such a project. Now the increased contract for the drilling of more wells is taken as indicative of a plan to carry the big project through.

The Patterson-Brown interests have leases in the Sweet Grass Hills aggregating 15,000 acres. Materials and equipment are being moved into location with all speed.

New Gas Plant

Casper, Wyo.—Midwest Refining Company has completed its new gas plant, No. 7, in the Salt Creek field. The new plant makes use of the residuum gas from the main plant and forces it down into the gas sands through key wells, in order to prolong the life of wells and to increase their oil production. The company has also completed three additional units to plants Nos. 14 and 19, one at plant No. 8, and two at plant No. 9. Booster plants Nos. 14 and 19 now have seven units each.

Test in Utah

Salt Lake City, Utah—S. J. Brendel of McKeesport, Pennsylvania, is representing Eastern capital which will drill a test for oil and potash on Crescent Eagle Oil Company property near Thompson, Utah. The lease contract calls for drilling to start on or before March 1, 1928. Should oil be discovered in commercial quantities, the contract calls for immediate development of potash resources on the structure.

Lost Soldier Deep Test Flows 800 Barrels

Casper, Wyo.—Producers & Refiners' deep test No. 25, in the Ferris field, Little Lost Soldier district, South Central Wyoming, is a gusher, producing around 800 barrels of very high grade crude at 4525 feet. This is a discovery of the utmost importance and has led to more interest and excitement in the district than has been known for years. Because of the steep folding of the formations the Embar sand is not in place, and the pay sand in this well is the Tensleep. The location of the well is exactly in the heart of the Ferris field, in the midst of a number of shallow producing wells. This is the first of several deep tests drilled which has found oil; it is the first, in fact, which has gotten the Tensleep, due to the above-mentioned folding. Location is in the center of 25-26-87. The oil is dark green with a paraffin base and tests 37.5 gravity on the Baume scale. It has a very high gasoline content and has, also, a good lubricating base.

The discovery will lead to deeper drilling throughout the Little Lost Soldier district, as well as in the red desert plains in Carbon and Sweetwater Counties, Southern Wyoming. There has been a great rush for leases in the district due to the fact that a number of permits have been allowed to lapse, or are about to lapse.

Another Failure on Sweet Grass Arch

Great Falls, Mont.—Another failure in the Sweet Grass Arch territory was registered a week ago when Continental Development Company's Healey Springs structure was completed in the Madison lime where a small flow of sulphur water was encountered. The test has been plugged and abandoned. This well is reported to have logged within five feet of the map prepared by E. B. Emrick, geologist. It was 20 feet higher than the discovery well at Pondera Dome, 93 feet higher than the Whiteside well, and 130 feet higher than the Midway. Location is on the southwest of section 19-27-3e. A small showing of oil was found in the Ellis-Madison contact, 2055-2058 feet.

The Sweet Grass Arch (Bannatyne, Pondera, Healey Springs, Midway, etc.), has had 15 or 20 test wells drilled within the last year, none of which have proved definitely productive of commercial oil. The two discovery wells on Pondera have been shut in during the last several months, and when opened up in order to be cleaned out a short time ago, produced as estimated 50 barrels each. The discovery wells on Bannatyne are also shut in, and their production is unknown. Ralph Arnold and his associates are responsible for the geologizing and development of this series of structures north of the city of Great Falls and south of the Kevin-Sunburst field.

California Stock Report Helps Curtailment Program

Increase of light and heavy oil in storage during January; operators plan to shut in production and conserve gas supply

By BRAD MILLS
Staff Representative

LOS ANGELES—With no completions in the Long Beach field, few new developments on the conservation program, and a slight decrease in practically every major field in the State, California experienced one of the quietest weeks in several months. Of the major districts, Ventura alone showed an increase in production.

The need and value of conservation was brought out by the January report of the Pacific Coast office of the American Petroleum Institute, in which it was shown that total California stocks increased more than 1,000,000 barrels during the month. It was the first general increase reported for several months and the first appreciable increase in light stocks for almost a year. Heavy oil stocks increased 714,000 barrels and light oil stocks soared 515,000 barrels. This was in marked contrast to a decrease of 795,000 barrels of heavy stocks and a drop of 1,103,000 barrels during December. Production was not exceptionally heavy during January, but seasonal conditions, a slight increase in the Long Beach field and a poorer demand for heavy crude accounted for the general increase. A revision of total stocks at the end of the year was made, but the January increase was shown after the revision was made.

The operators are still striving to bring about their program of conservation, which would shut in about 50,000 barrels of heavy oil and half as much light crude, in addition to about 60,000,000 cubic feet of gas. In doing so, California production would be brought to a sensible level. Experts at one of the conservation meetings estimated the production during 1928 by fields, month by month, and an average was struck from all the estimates. The committees are working on the curtailment plans, with these estimates as a basis.

Long Beach

Selover 16, Marland's only deep well in the new deep sand at Long Beach, has been placed on gas lift and is producing 900 barrels, as against about 550 barrels before the change was made. The increase has given the operators some encouragement, but they are still undecided on the true value of the deep sand. Marland has recemented Selover 11, another deep sand well. Richfield's Bonner 1, the first well completed below 6000 feet, is still producing at the rate of 300 barrels. George F. Getty and the Pan-American are rushing wells to the new sand, and it is not until several more are completed that the real value of the formation will be determined. In the main part of the field, the major operators are deepening a few wells from the Bixby to the Selover sand. Production is steadily dropping in both the Alamitos Heights sector and the main field.

Production in the Long Beach field dropped sharply during the week, due to the absence of completions. With about 175 wells drilling and deepening, the situation is expected to show a decided change in the immediate future. A careful survey of the field shows that 59 wells are drilling above 4000 feet, 40 between 4000 and 5000 feet, 34 are drilling deeper than 5000 feet and above the water shutoff, and 17 are drilling in the oil and sand below the water shutoff. Of the wells which are being redrilled and deepened, 12 are preparing to deepen, 10 are drilling between 4000 and 5000 feet, and 22 are drilling below 5000 feet. Thus it will be observed that 73 wells are drilling below 5000 feet, and of this number, 17 are below the final water shutoff. Such activity cannot fail to be reflected in clusters of completions during the next three months.

Rincon

Operators are still feeling around in the upper sand in an effort to develop something worth while in the Rincon field. Pan-American recently completed Hobson Fee 2, which was a 200-barrel producer at 2615 feet. The well is not entirely free from water trouble, however. E. J. Miley is experimenting with the bottom layers of the sand, but has not found a suitable place for a production test. Miley has two wells idle, while his third is feeling for a stable level in the upper sand. Pan-American, the discoverer of the field, apparently has not solved the water trouble in State 1, although it has produced satisfactorily for short periods. The well is now producing about one-third water. It appears that a large production will not be developed from the upper sand in any part of the field. The operators are still debating whether further attempts should be made to produce the formation, or merely ignore it. The average production for the past week was only 370 barrels from three wells. A survey of the entire field shows 18 drilling wells and four idle tests.

Potrero

Interest in the Los Angeles Basin is again centering around the Associated's Cypress 1 at Potrero. The company finally effected a satisfactory water shutoff and is swabbing the well to 3000 feet. Some oil is in evidence. The well recently flowed about 400 barrels of fluid from its present depth of 5407 feet, but the oil content was only 10 per cent. The four and one-fourth-inch water string was cemented at 5283 feet, leaving about 125 feet of oil sand.

The Carpenter and Smith interests, which recently completed a small gas well in the Potrero field, have made no definite plans for further drilling. A considerable quantity of salt water is accompanying the gas flow. The discovery of wet gas in the Potrero field adds considerable weight to the belief that a large pool of oil will eventually be discovered.

After settling to 190 barrels from an initial of about 300 barrels, the Pacific Eastern Production Company's Fruitvale discovery well is showing no signs of a further decrease. The excess gas is still hindering pumping operations, but the fact that the sand contains plenty of gas is a factor which easily offsets the inconvenience caused by pump valves.

Reports from near Petrolia, an isolated village in Humboldt County, state that a 250-barrel well has been completed on the Mattole River by the Northern Counties Oil Company. A careful check-up proved the reports to be exaggerated, however. The hole is really standing full of fluid, but it is not known how much water is in the well. The oil is a very light, green crude, and is standing on the water. Dozens of oil seepages are found in Humboldt County and three wells were drilled on Oil Creek in 1865. Two wells were drilled on Bear Creek in the same year on the strength of the seepages. Further operations in 1902 failed to disclose anything of importance. While a large number of wells have been drilled in the district, the majority have been without definite results. The size of the wells have varied from one-fourth barrel to two barrels. The crude is about 40 gravity and is found in a broken Cretaceous formation, which makes a very poor trap for oil.

Cat Canyon and Goleta

Cat Canyon and Goleta, the most interesting areas in Santa Barbara County, are comparatively quiet. Following the recent completion of two good wells in the former field, considerable drilling is planned by the leading operators, however. The Magenheimer Securities Company

(Continued on page 88)

West Texas Production

CRANE COUNTY

	Producing Wells	Daily Average Prod.
Church & Fields—		
Simms Oil Co. & Atlantic Oil Prod. Co.	31	12,600
Prairie Oil & Gas Company	12	12,460
Landreth Production Corporation	16	8,580
Tidal Oil Co. & Turman-Maxwell	24	6,705
Humble Oil & Refining Company	13	4,830
Eastland Oil Co. & Collett-O'Keefe	8	4,150
Pecos Oil Company	15	4,095
Magnolia Petroleum Company	33	3,675
Independent Oil & Gas Company	7	2,175
Gulf Production Company	10	1,390
Church-Fields-Weekly	3	1,240
The Texas Company	2	225
Geo. Church & Bob Fields	2	220
Stidham & Thrasher	1	15
Totals	177	62,360
Gulf-McElroy—		
Gulf Production Company	57	17,635
Gulf-McElroy—		
Gulf Production Company	1	25
Marland-Hughes—		
Marland Oil Company	15	570
The Texas Company	9	190
McMan Oil & Gas Company	2	65
Independent Oil & Gas Company	1	10
Totals	27	835
Totals for Crane County	262	80,855

UPTON COUNTY

Texas & Pacific Coal & Oil Company	17	2,305
Roxana Petroleum Corporation	36	1,895
Dixie Oil Company	36	1,810
Marland Oil Company	70	1,780
Gulf Production Company	15	1,305
Prairie Oil & Gas Company	8	1,075
The Texas Company	21	970
Humble Oil & Refining Company	10	875
Independent Oil & Gas Company	26	620
Champlin Refining Company	3	440
Orient Oil Operating Company	2	375
Amerada Petroleum Corporation	6	275
Sun Oil Company	10	150
Snowden & McSweeney	1	140
Wentz Oil Corporation	3	105
Republic Prod. Co. & Marland Oil Co.	6	85
Tidal Oil Company	3	80
Bryant & Atlantic Oil Prod. Co.	2	40
Pure Oil Company	1	40
Atlantic Oil Producing Co.	1	35
Simms Oil Company	3	25
McMan Oil & Gas Co.	2	20
Texon Oil & Land Company	1	15
White Eagle Oil & Ref. Co.	1	10
Totals	282	14,470

REAGAN COUNTY

Big Lake Oil Company	128	15,315
Texon Oil & Land Company	79	5,135
Skelly Oil Company	1	20
Totals	208	20,470

PECOS COUNTY

Mid-Kansas & Transcontinental Oil Co.	59	*17,675
The California Company	23	*7,015
Gulf Production Company	16	*6,160
Gulf Prod. Co. (Crockett County)	3	*865
Roxana Petroleum Corp.	12	*4,050
McMan & Marland Oil Co.	15	*3,840
Humble Oil & Refining Co.	10	*3,830
Simms Oil Company	6	*2,960
Marland Oil Company	10	*955
McMan Oil & Gas Company	2	*535
Red Bank Oil Company	2	*480
Pandem Oil Corp. & Gibson Oil Corp.	5	*335
Kirby Pet. Co. & Edson Pet. Co.	1	*240
Mazda Oil Corp. & Savoy Oil Co.	1	230
Osage Oil Corp. & T. T. Word	1	...
Totals	165	49,170

WINKLER COUNTY

	Producing Wells	Daily Average Prod.
Independent Oil & Gas Company	9	*22,485
Roxana Petroleum Corporation	10	*16,275
Atlantic Oil Producing Co.	8	*15,585
Humble Oil & Refining Co.	6	*12,850
Gulf Production Company	6	*12,410
Landreth Prod. Corp. & Roxana	5	*9,825
Republic Production Company	2	*9,725
Southern Crude & R. A. Westbrook	10	*9,125
Texon Oil & Land Company	3	*5,890
Cranfill-Reynolds, Inc.	3	5,220
Joe Maxwell & L. C. Turman	5	*4,020
Southern Crude & Dixie Oil Co.	8	*3,930
Magnolia Petroleum Company	5	3,830
Pure Oil Company	5	*3,255
Murchison & Cranfill Bros. Oil Co.	4	1,220
Llano Oil Company & Roxana	1	20
Totals	89	135,665

HOWARD COUNTY

Magnolia Petroleum Company	46	*1,345
Marland Oil Company	35	1,095
Sweeney & Henry	3	415
Pure Oil Company	4	295
Lockhart & Company	8	*140
Bristow & Merrick	4	125
Coyle-Concord Oil Company	3	120
F-H-E Oil Company	3	*80
Godley Oil & Gas Company	1	70
Mid-West Exploration Co.	2	50
Merrick & Lamb	2	50
Ward Oil Company	1	45
Tate-Tubbs & Bert Weekly	2	45
Humble Oil & Refining Company	2	40
Tidal Oil Company	2	40
Marland Oil Co. & Group 1 Oil Corp.	1	20
Owen-Sloan Oil Company	2	*15
Gulf Production Company	3	15
Schermerhorn Oil Company	1	*...
Totals	126	4,020

JONES COUNTY

Phillips Petroleum Company	13	805
Marland Oil Company	3	330
Mid-West Exploration Co.	4	105
Hutson-Weaver et al	1	20
Stebbins Oil & Gasoline Co.	1	10
Totals	22	1,270

MITCHELL COUNTY

The California Company	95	2,500
Magnolia Petroleum Company	22	460
Atlantic Oil Producing Co.	8	180
Eastland Oil Company et al	9	165
Tidal Oil Company	2	30
Fred Carey et al	1	20
Totals	137	3,355

CROCKETT COUNTY

Humble O. & R. Co. & Marland Oil Co.	12	410
Gulf Production Co.	6	340
Taylor-Link Oil Co. & Kirby Pet. Co.	1	335
Cushing Refining & Gasoline Co.	2	310
E. L. Smith Oil Company	5	185
Pecos Oil Company	3	120
Republic Production Co.	2	80
C. A. Jones et al	1	55
Roxana Petroleum Corp.	1	10
Totals	33	1,845

FISHER COUNTY

The Texas Company	1	230

LOVING COUNTY

Lockhart Bros. & Company	2	145

RUNNELS COUNTY

Vacuum Oil Co. & Hill-Ladd et al	2	80

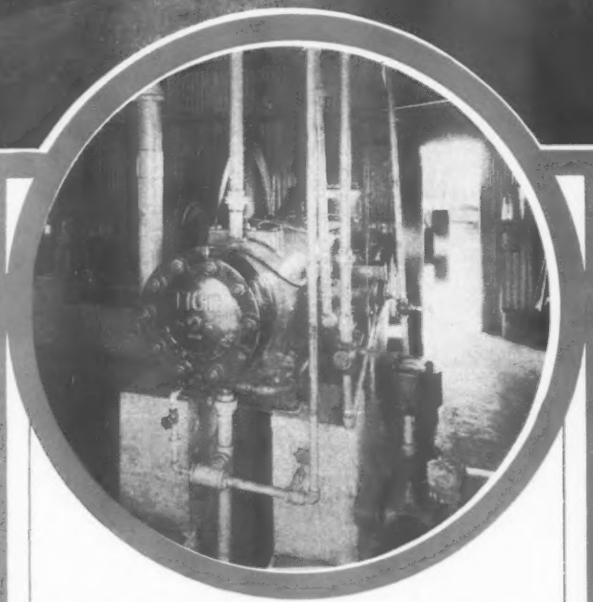
SCURRY COUNTY

The Northwest Company	5	45

ECTOR COUNTY

The Texas Company & J. S. Cosden	1	15
Totals for all fields	1335	311,635
Totals for all fields previous week	1317	299,855

*Production partially pinched.



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CRUDE OIL PRICE QUOTATIONS

CRUDE PRICE CHANGES

Findlay, Ohio.—Effective at the opening of the market this morning, February 23, Ohio Oil Company reduced the market price of Illinois, Princeton and Plymouth crudes ten cents per barrel.

CURRENT POSTINGS

EASTERN STATES

	Feb. 29 1928
New York Transit	$2.80
Bradford District	2.80
National Transit	2.65
Southwest	2.65
Eureka	2.60
Buckeye	2.35
Macksburg	2.80
Gaines	2.60
Somerset	1.60
Cabell	1.50
Ragland	.95
Corning, 35-cent grade	1.45
Corning, 25-cent grade	1.55
Keister	1.10

CENTRAL STATES

Illinois	1.50
Indiana	1.32
Lima	1.56
Plymouth	1.23
Princeton	1.50
Waterloo	1.35
Wooster	1.57

WESTERN KENTUCKY

Posted by Stoll Refining Company for crude from Allen, Warren, Franklin, Davies, Barren, All grades 1.50

MID-CONTINENT

Prairie, Sinclair and Gulf

28 to 28.9 gravity	.96
29 to 29.9 gravity	1.01
30 to 30.9 gravity	1.06
31 to 31.9 gravity	1.11
32 to 32.9 gravity	1.16
33 to 33.9 gravity	1.19
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.25
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.31
38 to 38.9 gravity	1.34
39 to 39.9 gravity	1.37
40 to 40.9 gravity	1.40
41 to 41.9 gravity	1.43
42 to 42.9 gravity	1.46
43 to 43.9 gravity	1.49
44 to 44.9 gravity	1.52
45 to 45.9 gravity	1.55
46 to 46.9 gravity	1.58
47 to 47.9 gravity	1.61

	Feb. 29 1928
48 to 48.9 gravity	1.64
49 to 49.9 gravity	1.67
50 to 50.9 gravity	1.70
51 to 51.9 gravity	1.73
52 and above	1.76

NORTH AND CENTRAL TEXAS

Ranger, North Texas, Mexia, Powell, Richland, Wortham, Currie, Moran, Nocona and Lytton Springs Crude
(Humble Oil and Refining Company)

Below 25 gravity	.76
25 to 25.9 gravity	.81
26 to 26.9 gravity	.86
27 to 27.9 gravity	.91
28 to 28.9 gravity	.96
29 to 29.9 gravity	1.01
30 to 30.9 gravity	1.06
31 to 31.9 gravity	1.11
32 to 32.9 gravity	1.16
33 to 33.9 gravity	1.19
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.25
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.31
38 to 38.9 gravity	1.34
39 to 39.9 gravity	1.37
40 to 40.9 gravity	1.40
41 to 41.9 gravity	1.43
42 to 42.9 gravity	1.46
43 to 43.9 gravity	1.49
44 and above	1.52

NORTH AND CENTRAL TEXAS

(The Texas Company and Magnolia Petroleum Company)*

24 to 24.9 gravity	.76
25 to 25.9 gravity	.81
26 to 26.9 gravity	.86
27 to 27.9 gravity	.91
28 to 28.9 gravity	.96
29 to 29.9 gravity	1.01
30 to 30.9 gravity	1.06
31 to 31.9 gravity	1.11
32 to 32.9 gravity	1.16
33 to 33.9 gravity	1.19
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.25
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.31
38 to 38.9 gravity	1.34
39 to 39.9 gravity	1.37
40 to 40.9 gravity	1.40
41 to 41.9 gravity	1.43
42 to 42.9 gravity	1.46
43 to 43.9 gravity	1.49

	Feb. 29 1928
44 to 44.9 gravity	1.52
45 to 45.9 gravity	1.55
46 to 46.9 gravity	1.58
47 to 47.9 gravity	1.61
48 to 48.9 gravity	1.64
49 to 49.9 gravity	1.67
50 to 50.9 gravity	1.70
51 to 51.9 gravity	1.73
42 and above	1.76

* Magnolia Petroleum Company posts the schedule below on oil below 30 gravity and from 30 gravity up to 31.9. Beginning with 32 to 32.9, Magnolia's posting is the same as that of The Texas Company.

Below 30 gravity	.75
30 to 30.9 gravity	.90
31 to 31.9 gravity	1.05

Corsicana heavy is $1.00 posted by Magnolia.

SOUTH TEXAS

Mirando 1.00

SOMERSET

Grayburg

Below 33 gravity	1.05
33 to 33.9 gravity	1.07
34 to 34.9 gravity	1.09
35 to 35.9 gravity	1.11
36 to 36.9 gravity	1.13
37 to 37.9 gravity	1.15
38 and above	1.17

GULF COAST

Grade "A" all companies	1.20
Gulf Coast Light Oil, below 25	1.15
25 to 25.9 gravity	1.17
26 to 26.9 gravity	1.19
27 to 27.9 gravity	1.21
28 to 28.9 gravity	1.23
29 to 29.9 gravity	1.25
30 to 30.9 gravity	1.27
31 to 31.9 gravity	1.29
32 to 32.9 gravity	1.31
33 to 33.9 gravity	1.33
34 to 34.9 gravity	1.35
35 to 35.9 gravity	1.37
36 to 36.9 gravity	1.39
37 to 37.9 gravity	1.41
38 to 38.9 gravity	1.43
39 to 39.9 gravity	1.45
40 and above	1.47

*Humble Oil & Refining Company's postings on Gulf Coast Light stop at 35 to 35.9. Its price on all crudes above 35 to $1.37 per barrel.

Magnolia Petroleum Company's postings stop at 31 to 31.9.

CALIFORNIA CRUDE OIL PRICES AT THE WELL

Following are the current prices offered by Standard Oil Company for crude oil at the well: (Price per barrel of 42 gallons in fields indicated.)

Gravity (degrees)	Signal Hill	Seal Beach	Huntington Beach	Inglewood	Olinda-Brea Canon	Athens-Rosecrans Dominguez	Torrance	Richfield	Whittier La Habra	Montebello	Coyotte Hill	Santa Fe Springs	Newhall McKittrick Kern River	Midway Sunset Elk Hills	Buena Vista Hills	Lost Hills	Coalinga	Wheeler
14-14-9	$ .85	$ .85	$ .85	$ .85	$ .85	$ ..	$ .85	$ .85	$ .85	$ .85	$ .85	$ ..	$ .75	$ .75	$ .75	$ .75	$ .75	$ .75
15-15-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
16-16-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
17-17-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
18-18-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
19-19-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	.75	.75	.75	.75	.75	.75
20-20-9	.85	.85	.85	.85	.85	..	.85	.85	.85	.85	.85	..	..	.77	.77	.77	.76	.76
21-21-9	.86	.86	.86	.86	.86	..	.86	.86	.85	.85	.86	.85	..	.79	.79	.79	.77	.77
22-22-9	.87	.87	.87	.87	.87	..	.87	.87	.85	.85	.87	.85	..	.81	.81	.81	.78	.78
23-23-9	.88	.88	.88	.88	.88	..	.88	.88	..	.85	.88	.85	..	.83	.83	.83	.79	.79
24-24-9	.89	.89	.89	.89	.89	..	.89	.89	..	.85	.89	.85	..	.85	.85	.85	.80	.80
25-25-9	.90	.90	.90	.90	.90	.90	.90	.90	..	.86	.90	.86	..	.87	.87	.87	.81	.81
26-26-9	.92	.92	.92	.92	.92	.92	.92	.92	..	.87	.91	.87	..	.89	.89	.89	.83	.82
27-27-9	.94	.94	.94	.94	.94	.94	.94	.94	..	.88	.92	.88	..	.91	.91	.91	.85	.83
28-28-9	.96	.96	.96	.96	.96	.96	.96	.96	..	.89	.93	.89	..	.93	.93	.93	.87	..
29-29-9	.98	.98	.98	..	.98	.98	..	1.00	..	.91	.95	.93	..	.99	.99	.99	.91	..
30-30-9	1.00	1.00	1.00	..	1.00	1.00	..	..	..	..	..	.95	..	1.02	1.02	1.02	.93	..
31-31-9	1.03	1.03	1.03	..	..	1.03	..	..	..	..	..	.97	..	1.05	1.05	1.05	.95	..
32-32-9	1.06	1.06	1.06	..	..	1.06	..	..	..	..	..	.99	..	1.08	1.08	1.08	.97	..
33-33-9	..	..	..	..	..	1.09	..	..	..	..	..	1.01	..	..	..	1.11	.99	..
34-34-9	..	..	..	..	..	1.12	..	..	..	..	..	1.03	..	..	..	..	1.01	..
35-35-9	..	..	..	..	..	1.15	..	..	..	..	..	1.06	..	..	..	..	..	..
36-36-9	..	..	..	..	..	1.18	..	..	..	..	..	1.09	..	..	..	..	..	..
37-37-9	..	..	..	..	..	1.21	..	..	..	..	..	1.12	..	..	..	..	..	..
38-38-9	..	..	..	..	..	1.24	..	..	..	..	..	1.15	..	..	..	..	..	..
39-39-9	..	..	..	..	..	1.27	..	..	..	..	..	..	..	..	..	..	..	..
40-40-9	..	..	..	..	..	1.30	..	..	..	..	..	..	..	..	..	..	..	..
41-41-9	..	..	..	..	..	1.33	..	..	..	..	..	..	..	..	..	..	..	..
42-42-9	..	..	..	..	..	1.36	..	..	..	..	..	..	..	..	..	..	..	..

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SINCLAIR OPALINE MOTOR OIL

REG. U. S. PAT. OFF

Seals Power at every Degree of Wear

When you become an Authorized OPALINE Dealer!

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... you have the exclusive Opaline method of applying motor oil.

... you ask a motorist, when he drives in, "What's your mileage?" Then you consult the Sinclair Recommendation Index and you give him the correct grade of Opaline he needs—whether his car is new, whether it has travelled 2,000 miles, 12,000 miles, or over!

... that grade of Opaline will fit the degree of *wear* in his engine. It will seal the pistons and prevent power from blowing by!

... that's the *extra* service Opaline gives a motorist — the *extra* service *YOU* give him. And he'll come back for more!

... the right *grade* of motor oil is just as important as the right *quality*. The Authorized Opaline Dealer gives a motorist *both*. May we tell you the added advantage of selling such a favorably known, nationally advertised brand?

SINCLAIR REFINING COMPANY, INC.

Also Makers of Sinclair Gasoline and H-C Gasoline

45 NASSAU STREET, NEW YORK

Atlanta Boston Chicago Houston Kansas City

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	Feb. 29 1928
MARKHAM	
The Texas Company	
All grades	1.00
LULING	
All grades	1.00
PANHANDLE	
GRAY COUNTY	
(Humble Oil and Refining Company, Magnolia Petroleum Company and Gulf Refining Company)	
Below 27 gravity	.60
27 to 27.9 gravity	.65
28 to 28.9 gravity	.70
29 to 29.9 gravity	.75
30 to 30.9 gravity	.80
31 to 31.9 gravity	.85
32 to 32.9 gravity	.90
33 to 33.9 gravity	.93
34 to 34.9 gravity	.96
35 to 35.9 gravity	.99
36 to 36.9 gravity	1.02
37 to 37.9 gravity	1.05
38 to 38.9 gravity	1.08
39 to 39.9 gravity	1.11
40 to 40.9 gravity	1.14
41 to 41.9 gravity	1.17
42 to 42.9 gravity	1.20
43 to 43.9 gravity	1.23
44 and above	1.26
WHEELER COUNTY	
(Humble Oil and Refining Company and Magnolia Petroleum Company)	
Below 29 gravity	.60
29 to 29.9 gravity	.65
30 to 30.9 gravity	.70
31 to 31.9 gravity	.75
32 to 32.9 gravity	.80
33 to 33.9 gravity	.83
34 to 34.9 gravity	.86
35 to 35.9 gravity	.89
36 to 36.9 gravity	.92
37 to 37.9 gravity	.95
38 to 38.9 gravity	.98
39 to 39.9 gravity	1.01
40 to 40.9 gravity	1.04
41 to 41.9 gravity	1.07
42 to 42.9 gravity	1.10
43 to 43.9 gravity	1.13
44 and above	1.16
CARSON-HUTCHINSON COUNTIES	
(Humble Oil and Refining Company, Magnolia Petroleum Company and Gulf Refining Company)	
Below 31 gravity	.60
31 to 31.9 gravity	.65
32 to 32.9 gravity	.70
33 to 33.9 gravity	.73
34 to 34.9 gravity	.76
35 to 35.9 gravity	.79
36 to 36.9 gravity	.82
37 to 37.9 gravity	.85
38 to 38.9 gravity	.88
39 to 39.9 gravity	.91
40 to 40.9 gravity	.94
41 to 41.9 gravity	.97
42 to 42.9 gravity	1.00
43 to 43.9 gravity	1.03
44 and above	1.06
(Humble Oil & Refining Company)	
Crane, Upton, Crockett and Pecos counties, all grades	.60
WEST TEXAS	
(Humble, Gulf, Magnolia, Kay County Gas Company and Southern Crude Oil Purchasing Company)*	
Crane, Crockett, Pecos, Upton and Winkler, Counties	.60
*Kay County Gas Company does not buy in Winkler and Pecos Counties, and Southern does not buy in Pecos or Crockett.	
(Magnolia Petroleum Company)	
Mitchell County	$ .93
Howard-Glasscock County (shallow)	.80
Howard-Glasscock County (deep)	.60
Col-Tex Refining Company	
Howard and Mitchell Counties	$ .80
WYOMING-MONTANA	
Wyoming	
Byron	1.33
Ferris	1.60
Elk Basin	1.33
Grass Creek	1.33
Rock Creek	1.25
Lost Soldier	.95
Lance Creek	1.33
Mule Creek	1.10
Notches	.65
Big Muddy	1.25
Osage	1.33
Hamilton Dome	.85
Pilot Butte	1.75
Torchlight-Greybull	1.33
Lander	.80
Simpson Ridge	.80
Rex Lake	1.10
South Casper Creek-Poison Spider	1.00
Salt Creek	
Midwest Refining Company	
29 to 29.9 gravity	1.14
30 to 30.9 gravity	1.16
31 to 31.9 gravity	1.18
32 to 32.9 gravity	1.20
33 to 33.9 gravity	1.22
34 to 34.9 gravity	1.24
35 to 35.9 gravity	1.26
36 to 36.9 gravity	1.28
37 and above	1.30
MONTANA	
Sunburst	1.50
Cat Creek	1.33
Lake Basin	2.20
NEW MEXICO	
Artesia	1.00
Hogback	1.38
CANADA	
Oil Springs	2.02
Petrolia	1.95
LOUISIANA-ARKANSAS	
(All Companies)*	
Homer, Haynesville, Caddo, El Dorado, De Soto and Crichton	
Below 28 gravity	.91
28 to 28.9 gravity	.96
29 to 29.9 gravity	1.01
30 to 30.9 gravity	1.06
31 to 31.9 gravity	1.11
32 to 32.9 gravity	1.16
33 to 33.9 gravity	1.19
34 to 34.9 gravity	1.22
35 to 35.9 gravity	1.25
36 to 36.9 gravity	1.28
37 to 37.9 gravity	1.31
38 to 38.9 gravity	1.34
39 to 39.9 gravity	1.37
40 to 40.9 gravity	1.40
41 to 41.9 gravity	1.43
42 to 42.9 gravity	1.46
43 to 43.9 gravity	1.49
44 to 44.9 gravity	1.52
45 to 45.9 gravity	1.55
46 to 46.9 gravity	1.58
47 to 47.9 gravity	1.61
48 to 48.9 gravity	1.64
49 to 49.9 gravity	1.67
50 to 50.9 gravity	1.70
51 to 51.9 gravity	1.73
52 and above	1.76
*Shreveport-Eldorado's postings stop at above 40 gravity.	
STEPHENS	
(All Companies)	
Below 28	.85
28 to 28.9 gravity	.87
29 to 29.9 gravity	.89
30 to 30.9 gravity	.91
31 to 31.9 gravity	.93
32 and above	.95
SMACKOVER	
(All Companies)	
Below 24 gravity	.75
24 and above	.90
Bellevue	1.25
Jennings	1.15
Vinton	1.30
Edgerly	1.30
Starks Dome	1.30
Urania	.75
Cotton Valley	.75
Calion	.75

IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

American Petroleum Institute Figures (Barrels of 42 gallons)

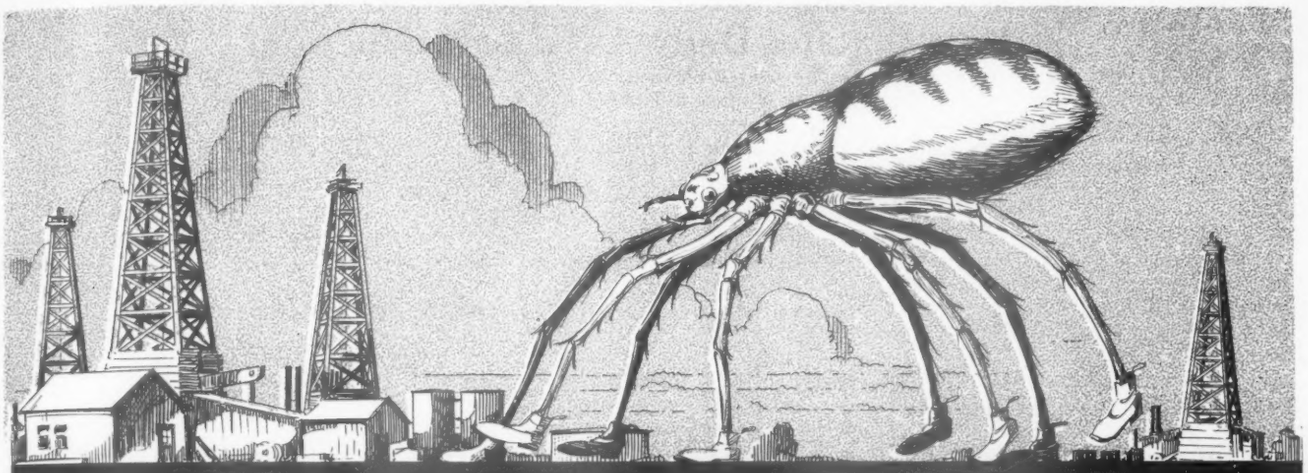
	Feb. 18	Feb. 11
AT ATLANTIC COAST PORTS		
Baltimore	197,000	.....
Boston	.....	.....
New York	990,000	*815,000
Philadelphia	298,000	195,000
Others	141,000	*166,000
Total	1,626,000	1,176,000
Daily average	232,286	168,000
AT GULF COAST PORTS		
Galveston District	.....	*97,000
New Orleans and Baton Rouge	179,000	*100,000
Port Arthur and Sabine District	.....	123,000
Tampa	59,000	.....
Total	238,000	320,000
Daily average	34,000	45,714
AT ALL U. S. PORTS		
Total	1,864,000	1,496,000
Daily average	266,286	213,714
Daily average, four weeks ended	247,107	229,500

RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

American Petroleum Institute Figures (Barrels of 42 gallons)

	Feb. 18	Feb. 11
AT ATLANTIC COAST PORTS		
Baltimore	88,000	.....
Boston	.....	.....
New York	317,000	95,000
Philadelphia	123,000	371,000
Others	79,000	*173,000
Total	607,000	639,000
Daily average	86,714	91,286
AT GULF COAST PORTS		
Daily average	.....	.....
TOTAL ATLANTIC AND GULF COAST PORTS	607,000	639,000
Daily average	86,714	91,286
Daily average, four weeks ended	62,179	70,786
DISTRIBUTION OF TOTAL CALIFORNIA OIL RECEIPTS IS AS FOLLOWS:		
Crude	169,000	150,000
Gasoline	287,000	336,000
Kerosene	.....	95,000
Gas oil	151,000	.....
Lubricating	.....	58,000
Total	607,000	639,000

*—Revised.



MANY STEPS AHEAD

of its nearest Competitor

BOVAIRD GRIP TUBING SPIDER

[904 Mid-Continent Bldg.
TULSA, OKLAHOMA]

BOVAIRD

Say you saw it in The OIL WEEKLY

United States Daily Average Production

Figures below are taken from the complete revised estimates of the AMERICAN PETROLEUM INSTITUTE except for the current week, which are advance estimates issued by the A. P. I. and are subject to revision:

1926	Oklahoma	Kansas	Texas (Outside Gulf Coast)	Gulf Coast	North Louisiana	Arkansas	Eastern States	Rocky Mountain	California	United States Daily Ave.	United States Total
January	445,950	99,600	256,500	90,100	43,800	178,000	100,450	101,700	618,750	1,934,850	59,979,900
February	450,300	102,050	246,600	91,550	45,300	169,400	98,950	101,050	604,950	1,910,150	53,483,900
March	457,900	103,000	260,500	91,950	48,800	165,700	97,800	102,100	604,400	1,932,150	59,897,250
April	464,850	102,600	265,600	90,900	51,550	170,750	101,750	107,300	600,650	1,955,950	58,678,000
May	463,350	106,150	280,050	93,700	59,100	175,700	106,100	111,650	602,400	1,998,200	61,944,950
June	459,100	107,900	305,100	91,350	60,350	166,950	106,050	113,300	607,550	2,017,650	60,529,350
July	456,700	110,450	336,300	116,550	57,100	161,650	104,650	107,750	614,400	2,065,550	64,032,300
August	465,300	111,750	383,800	162,800	56,800	157,350	108,600	110,600	608,900	2,165,900	67,143,450
September	466,050	113,400	403,750	175,200	56,850	153,250	110,200	104,700	598,150	2,181,550	65,446,500
October	503,350	114,650	444,700	169,900	58,200	149,500	109,450	98,500	614,200	2,262,450	70,136,500
November	550,700	115,800	477,000	176,900	56,450	143,700	111,150	92,900	643,650	2,368,250	71,047,550
December	564,250	118,800	480,800	181,900	54,800	138,600	110,050	85,650	660,400	2,395,250	74,252,700
1927											
January	598,500	117,200	466,400	173,900	52,900	131,550	107,850	84,450	653,450	2,386,200	73,972,150
February	693,350	116,250	479,800	154,600	52,800	128,200	107,150	85,300	642,700	2,460,150	68,884,300
March	710,350	116,100	475,000	154,750	51,450	124,500	104,400	87,600	640,850	2,465,000	76,414,900
April	723,700	115,400	477,300	155,100	50,500	113,350	108,000	89,350	644,550	2,477,250	74,317,750
May	742,200	114,600	488,700	151,300	47,450	112,700	114,000	89,300	633,550	2,493,800	77,307,700
June	768,600	112,200	480,800	151,650	49,150	112,450	111,850	86,050	638,550	2,511,300	75,338,900
July	846,750	107,750	475,800	142,950	56,200	109,900	111,800	86,950	620,700	2,558,800	79,322,300
August	832,900	105,100	483,450	139,350	56,950	104,750	114,600	80,750	621,450	2,539,300	78,717,850
September	797,450	105,200	493,750	142,900	53,450	101,350	110,800	74,500	637,250	2,516,650	75,498,900
October	782,300	105,100	497,900	138,400	51,300	100,450	113,600	73,250	629,000	2,491,300	77,230,000
November	766,900	106,650	501,750	138,100	49,400	97,850	114,900	75,050	623,850	2,474,450	74,233,500
December	720,700	106,150	531,650	138,500	47,200	94,950	111,250	77,150	624,600	2,452,150	76,017,050
1928											
January	675,450	108,300	523,300	125,450	45,250	90,050	109,600	77,000	617,100	2,371,500	73,516,500
February 4	667,700	110,800	532,000	119,100	45,400	90,150	107,500	79,550	614,100	2,366,300	16,564,100
February 11	679,750	109,650	533,850	116,050	45,650	88,550	106,000	74,300	613,700	2,358,500	16,509,500
February 18	668,100	109,950	541,700	113,450	45,350	88,250	104,500	74,700	617,300	2,363,300	16,543,100
February 25	658,700	110,700	540,300	114,500	44,900	87,750	103,500	74,900	613,900	2,349,150	16,444,050
Increase	.....	750	.....	1,050	.....	.....	.....	200	.....	.....	.....
Decrease	9,400	.....	1,400	.....	450	500	1,000	.....	3,400	14,150	99,050

TEXAS

(Outside Gulf Coast)

PANHANDLE DISTRICT

	Feb. 25	Feb. 18
Carson County	7,050	7,600
Gray County	19,050	20,800
Hutchinson County	46,700	46,800
Wheeler County	900	1,000
Others	50	50
Totals	73,750	76,250

NORTH TEXAS

Archer County	19,500	20,000
Baylor County	100	100
Burkburnett	12,600	12,550
Clay County (Petrolia)	500	500
Electra	11,000	11,250
Iowa Park-KMA	1,900	1,950
Montague and Cooke Cos.	12,700	12,950
Wilbarger	10,250	10,100
Totals	68,550	69,400

WEST CENTRAL TEXAS

Brown County	12,500	13,000
Callahan County	3,850	3,900
Coleman County	1,450	1,500
Eastland-Desdemona	8,750	8,500
Jack County	1,500	1,450
Palo Pinto County	500	500
Shackelford County	6,350	6,200
Stephens County	7,650	7,500
Throckmorton County	1,000	1,050
Young County	8,950	9,100
Others	500	500
Totals	53,000	53,200

WEST TEXAS

Crane-Upton Counties	92,000	96,000
Crockett County	2,600	2,950
Howard County	4,150	5,200
Jones County	1,100	1,200
Mitchell-Scurry Counties	3,300	3,500
Pecos County	46,400	48,300
Reagan County	20,000	20,500
Winkler County	126,000	115,600
Others	2,350	2,500
Totals	297,900	295,750

EAST CENTRAL TEXAS

Corsicana-Powell	11,800	12,000
Currie	500	500
Mexia	7,400	7,600
Nigger Creek	1,400	1,600
Richland	500	500
Wortham	1,900	1,900
Totals	23,500	24,100

SOUTHWEST TEXAS

Dale	400	550
Laredo District	6,450	6,400
Luling	13,950	13,250
Lytton Springs	1,600	1,600
Somerset	800	800
Others	400	400
Totals	23,600	23,000
Total Texas (outside Gulf Coast)	540,300	541,700

TEXAS GULF COAST

Barbers Hill	650	650
Batson	1,350	1,350
Big Creek	2,000	1,900
Blue Ridge	4,000	4,500
Boling	2,500	1,950
Damon Mound	850	900
Goose Creek	7,300	7,350
Hull	11,500	11,600
Humble	1,500	1,600
Orange County	4,650	4,400
Pierce Junction	8,950	8,750
Saratoga	1,050	1,050
Sour Lake	3,400	3,650
South Liberty	2,200	2,150
Spindle Top	36,700	36,600
West Columbia	8,000	7,500
Others	2,500	3,000
Totals	99,100	98,950
Texas Total	639,400	640,650

OKLAHOMA

North Braman	3,000	3,150
South Braman	1,850	1,800
Blackwell	3,800	3,800
Hubbard	3,000	3,000
Thomas	1,450	1,500
Tonkawa	15,550	15,800
Garber	9,900	9,950
Burbank	44,900	43,300
Osage (outside Burbank)	29,500	29,550
Watchorn	950	1,000
Cushing	21,200	21,000
Yale Jennings	8,900	8,950
Davenport	2,400	2,350
Bristow Slick	24,900	24,900
North Okmulgee	15,800	15,850
Lyons Deaner	7,600	7,700
Stroud	1,100	1,100
Cromwell	10,500	10,350
Papoose	5,250	5,350
Wewoka	8,450	8,450
Seminole	56,600	58,050
Searight	18,200	18,800
Earlsboro	109,850	114,600
Graham	5,750	5,750
Healdton	14,350	14,400
Scholem Alechem	14,400	13,900
Bowlegs	88,800	92,900
Little River	33,500	34,150
Duncan District	6,600	6,600
Fox	1,700	1,700
Hewitt	8,800	8,800
Others	80,150	79,600
Totals	658,700	668,100

CALIFORNIA

Santa Fe Springs	38,000	38,000
Long Beach	116,500	118,000
Huntington Beach	58,500	60,000
Torrance	19,500	19,800
Dominguez	12,500	12,800
Rosecrans	7,500	7,500
Inglewood	30,500	30,500
Midway-Sunset	79,500	79,500
Ventura Avenue	54,500	54,000
Seal Beach	39,500	39,800
Others	157,400	157,400
Totals	613,900	617,300

ARKANSAS

El Dorado	5,150	5,150
Champagnolle	1,100	1,250
Smackover Light	8,500	8,550
Smackover Heavy	67,700	67,950
Stephens	1,050	1,100
Nevada	1,800	1,800
Lisbon	2,350	2,350
Others	100	100
Totals	87,750	88,250

KANSAS

	Feb. 25	Feb. 18
Greenwood County	30,150	30,000
Florence-Covert	1,450	1,450
Peabody-Ebling	3,750	3,750
Eldorado-Towanda	14,250	14,250
Augusta-Fox Bush	4,200	4,200
Rainbow Bend	1,850	1,650
Russell	2,950	2,900
Churchill	12,600	12,350
Oxford	14,100	14,400
Others	25,400	25,000
Totals	110,700	109,950

NORTH LOUISIANA

Homer	4,400	4,450
Haynesville	6,400	6,400
Caddo Light	11,250	11,550
Caddo Heavy	3,900	3,950
DeSoto-Red River	4,300	4,300
Elm Grove	550	550
Bellevue	1,000	1,000
Cotton Valley	4,500	4,500
Urania	7,950	7,950
Pleasant Hill	650	700
Totals North La.	44,900	45,350

LOUISIANA GULF COAST

Edgerly	1,500	1,750
Evangeline	1,000	1,150
Lockport	4,700	4,750
Vinton	4,600	4,600
Others	3,600	2,250
Total La. Gulf Coast	15,400	14,500
Louisiana Total	60,300	59,850

MOUNTAIN STATES

WYOMING

Salt Creek	37,300	38,500
Grass Creek	2,400	2,500
Elk Basin	1,050	1,150
Big Muddy	2,700	2,750
Lost Soldier	3,200	2,750
Rock River	2,750	2,700
Lance Creek	600	650
Others	3,600	3,350
Totals	53,600	54,350

MONTANA

Cat Creek	1,800	1,800
Sunburst	9,000	8,500
Others	150	150
Totals	10,950	10,450

COLORADO

Moffats (Craig)	1,200	1,300
Fort Collins	3,150	3,050
Florence	1,150	1,100
Others	2,300	2,050
Totals	7,800	7,500

NEW MEXICO

Table Mesa	250	350
Artesia	1,250	1,250
Hogback	500	550
Rattlesnake	300	....
Others	250	250
Totals	2,550	2,400
Totals Mountain States	74,900	74,700

EASTERN STATES

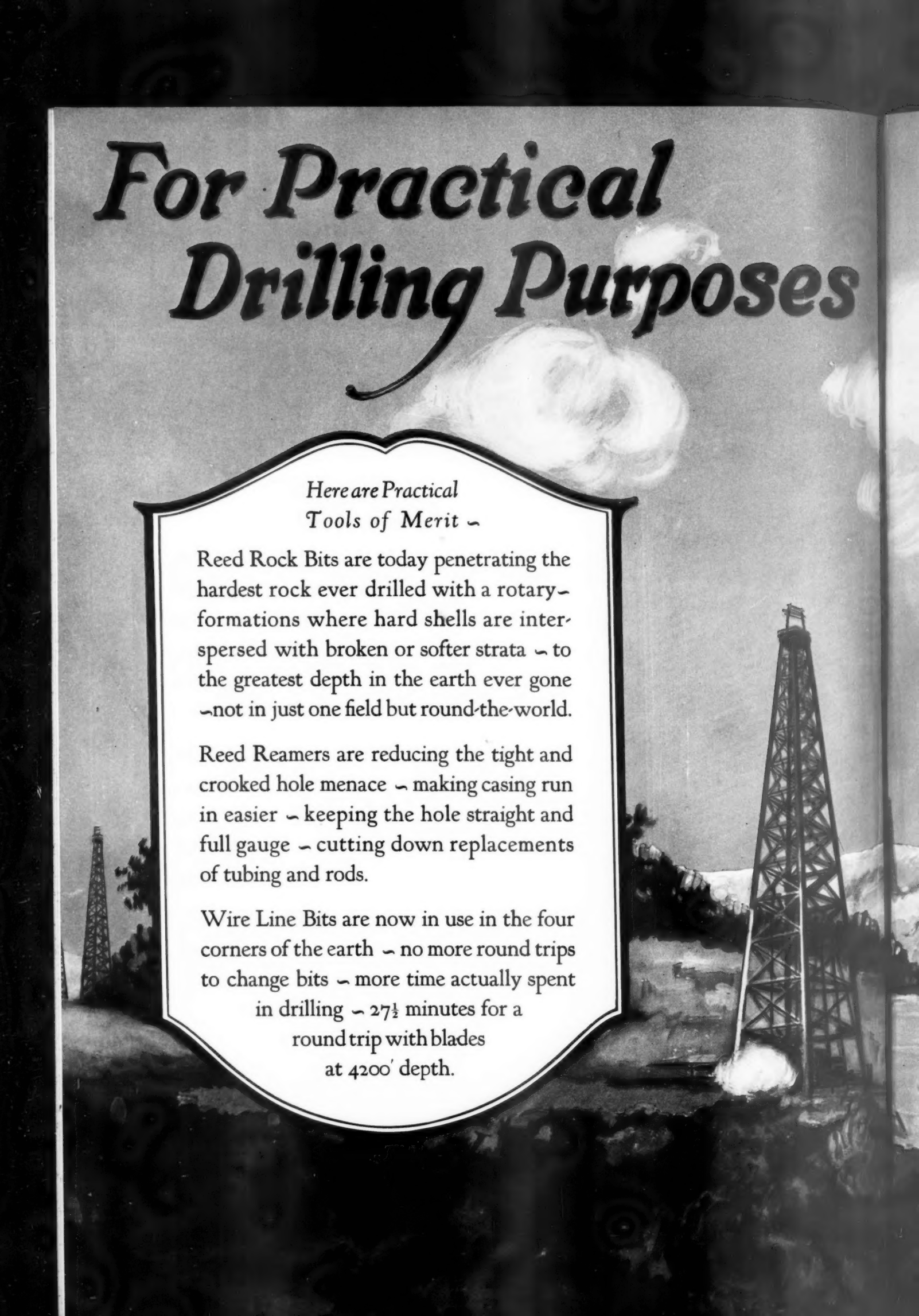
(Including Ill., Ind., Ohio, W. Va., Pa., Ky. and N. Y.)	103,500	104,500

PRODUCTION SUMMARY

East of Rockies	1,660,350	1,671,300
United States Total	2,349,150	2,363,300

Standard Model for Hard Digging of all Kinds
Model -26 for Hard and Semi-Hard Formations
REED ROTARY DRILLING TOOLS
SPEED • ECONOMY • DURABILITY
Wire Line Bit Supplanting the Fishtail and Eliminating Pipe Pulling
Double Three Point Reamer for Straight Hole Behind Discs, Fishtail etc.

For Practical Drilling Purposes



Here are Practical Tools of Merit –

Reed Rock Bits are today penetrating the hardest rock ever drilled with a rotary – formations where hard shells are interspersed with broken or softer strata – to the greatest depth in the earth ever gone – not in just one field but round-the-world.

Reed Reamers are reducing the tight and crooked hole menace – making casing run in easier – keeping the hole straight and full gauge – cutting down replacements of tubing and rods.

Wire Line Bits are now in use in the four corners of the earth – no more round trips to change bits – more time actually spent in drilling – 27½ minutes for a round trip with blades at 4200′ depth.

For the Unusual Job

Here are Tools Extraordinary –

Big Hole Rock Bits with Upward Cutting Reamers – real hole insurance where formation sluffs off or through boulders – permits of reaming coming out of hole.

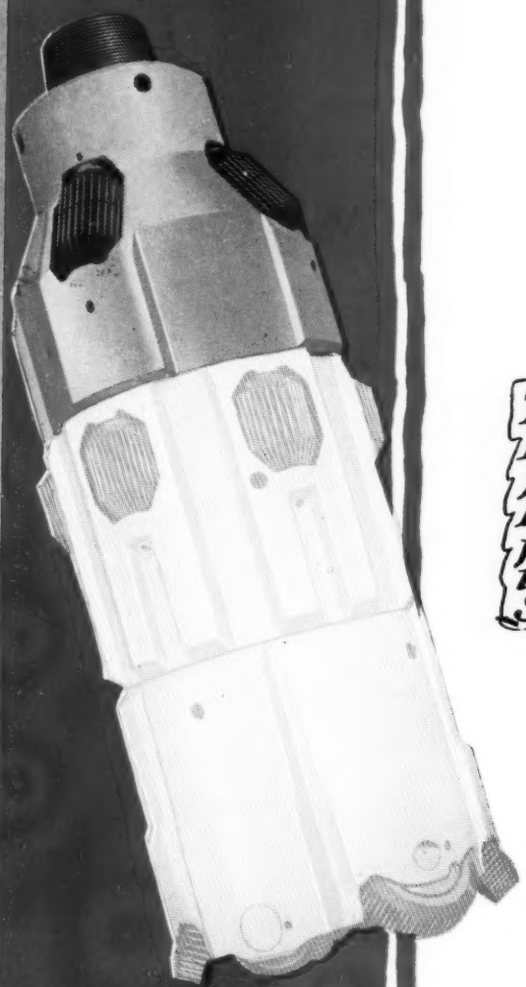
Tandem Reamers with Casing Rollers – just ordinary Reed Reamers but built up from a pilot – a sure fire success in rolling out to full size badly collapsed casing of any or all sizes.

Big Hole Double Reamers – up to 27" in diameter – behind fishtail and disc bits – make the bit go down straight – smooths up the walls of the hole and puts it in shape for an easy casing job.

Services not only of these tools but of the Engineering Department of the REED ROLLER BIT COMPANY are at the command of the industry.

JEAN WALKER

Upward Cutting Reamer Good Insurance for Large Holes or in case of Heaving or Shifting Formation



Tandem Casing Roller made up from Standard Reed Reamers from Small Pilot to any Required Size

25" Double Three Point Reamer for Reaming Hole Before Setting "Stovepipe"

Reed Roller Bit Co.

HOUSTON LOS ANGELES

COMPLETIONS FOR PAST WEEK IN U.S. FIELDS

SUMMARIZED REVIEW OF FIELD RESULTS

State—	Completions This Week	Completions Last Week	Producers This Week	Producers Last Week	Gas Wells This Week	Gas Wells Last Week	Failures This Week	Failures Last Week	Initial Production This Week	Initial Production Last Week
Arkansas	2	3	..	2	1	..	1	1	....	70
California	10	4	9	10	..	..	1	4	6,530	15,650
Colorado	..	2	..	2	..	..	..	..	....	175
Illinois	3	2	1	1	1	..	1	1	3	45
Indiana	2	10	1	3	..	5	1	2	75	60
Kansas	19	23	11	10	1	1	7	12	1,380	1,678
Kentucky	12	22	10	19	..	1	2	2	1,664	1,008
Louisiana	13	18	3	5	5	7	5	6	125	4,680
Montana	..	1	..	1	..	..	..	..	....	75
New York	..	9	..	8	..	..	..	1	....	18
Ohio	23	31	6	11	13	16	4	4	137	608
Oklahoma	77	64	32	32	12	7	33	25	14,841	12,953
Pennsylvania	7	43	2	37	2	3	3	3	12	116
Tennessee	1	8	1	3	..	1	..	4	960	60
Texas	104	109	49	50	8	6	47	53	115,070	69,163
West Virginia	26	11	9	3	11	2	6	6	182	14
Wyoming	..	2	..	2	..	..	..	..	....	115
Totals	299	372	134	199	54	49	111	124	140,979	106,488
Increase this week	..	..	..	..	5	..	..	..	34,491	....
Decrease this week	73	..	65	..	..	..	13	..	....	....

NOTE—Following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million cubic feet of gas; abn—abandoned; bbls—barrels; b. s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing; ft—feet; in—inches; lcn—location; m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water; td—total depth; 'ur—underreaming; wo—workover; wosr—waiting on standard rig.

OKLAHOMA

Company, Well and Location	Initial Production Bbls.	Depth
CARTER COUNTY—		
Magnolia Pet. Co., Carter 2, sw se sw, 14-1s-3w	180	2415
CREEK COUNTY—		
J. Winemiller et al, Deenun 1, sec nw, 4-17-11e	275	1567
H. U. Bartlett, McIntosh 1, nec nw nw, 28-18-9e	15	2636
H. C. Wilson, Miles 1, nec nw, 10-15-8e	*	3241
L & D Oil Co., townlot 1, sec ne ne, 23-17-10e	*	2550
Chief Drlg. Co., Brown 1, sec 1-17-10e	*	2868
Hemlock Oil Co., Thomason 1, nwc ne sw, 35-18-10e	*	2497
GRADY COUNTY—		
Glaton Camp, Soloman 1, swc, 25-4n-8w	¶4	2094
J. J. Hall, Woods 1, swc, 1-4n-8w	¶19	2375
Little Nick Oil Co., McCaughtry 4, nec nw nw, 35-5n-8w	¶36	2400
Okla. Gas Utilities Corp., Farwell 8, nw sw ne, 26-5n-8w	¶49	2400
GRANT COUNTY—		
Prairie O. & G. Co., Lane 3, nec, 22-27-3w	400	4094
HUGHES COUNTY—		
Winkler & McQueen, Tyger 1, c sw se, 31-5n-9e	*	2955
KAY COUNTY—		
Prairie O. & G. Co., School Land 1, se sw, 36-28-1w	¶1	676
Harris & Haun, Hobough 2, swc, 30-29-1e	¶1	947
Empire G. & O. Co., Swenson 1, nec sw sw se, 29-29-1e	*	3593
Greer & Walters, Skein 2, c nw sw, 19-29-1e	*	1560
Harris & Haun, La Mar 2, nec nw sw, 22-29-1w	*	2160
LOGAN COUNTY—		
Ramsey Bros., Quigley 1, ne se nw, 28-18-4w	*	1000
MUSKOGEE COUNTY—		
J. L. Haner, M. Stidham 2, swc, 9-15-18e	¶2	802
J. M. Foltz, G. Woodall 1A, sec sw nw, 20-15-16e	¶4	1200
P. Boyle et al, Lowery 1, swc nw nw sw, 9-15-1e	15	1624
Turner & Witte, Crittenden 4, swc se sw ne, 6-14-19e	*	497
J. D. Linthicum, Kelly 2, swc ne se, 5-14-19e	*	685
J. A. Evans et al, Thompson 1, swc nw sw, 2-14-19e	*	478
J. L. Dixon, Callahan 5, c se, 2-14-18e	*	1944
OKFUSKEE COUNTY—		
Phillips Pet. Co., Tecumseh 1, nw ne nw, 21-10-9e	¶30	3278
Moffit et al, Holmes 5, nec nw ne, 7-11-12e	10	1973
Champlin O. & R. Co., Ingram 2, nwc sw sw, 14-11-11e	225	3530
OKMULGEE COUNTY—		
Carr Peterson, Ware 5, nwc sw, 9-15-14e	¶15	1841
A. C. Saint et al, Warren 1A, nec sw nw, 12-14-12e	*	2759
Amerada Pet. Corp. et al, Farmer 1, swc se, 7-14-11e	*	3076
E. P. Jones et al, Jones 1, c sw ne, 14-14-13e	*	1932
OSAGE COUNTY—		
Prairie O. & G. Co., 1, swc nw nw, 20-27-6e	1050	2963
Mid-Kansas O. & G. Co. & Devonian O. Co., 1, swc se nw, 27-21-10e	1530	1551
New England O. & Pipe Line Co., 1, sec sw, 17-23-10e	5	2591
Carter Oil Co., 4, sec, 3-26-6e	358	2924
Kewanee O. & G. Co., 6, nwc ne, 28-27-6e	1600	2986
1, sec ne, 28-27-6e	400	2948
Gypsy O. Co., 4, se ne nw, 28-27-6e	135	2972
Phillips Pet. Co., 7, nwc se, 17-27-6e	900	2951
Delmar Oil Co., 1, cwl e½ ne, 4-23-10e	*	2263
McCuen, Wormser et al 1, swc nw, 15-24-8e	*	872
PAWNEE COUNTY—		
Markham & Schoenfeldt, McClure 2, nec se sw ne, 9-20-9e	*	2804
PAYNE COUNTY—		
Payne County Gas Co., Knott 2, nec se se, 7-18-4e	125	4286
PAWNEE COUNTY—		
Turner et al, Smelzer 2, nwc sw sw nw, 29-20-9e	¶1	1124
PITTSBURG COUNTY—		
Quinton Spelter Co., Houston 1, nec, 17-7-18e	¶15	2060
PONTOTOC COUNTY—		
La. Oil Ref. Co., Perry 12, nec, 19-5n-8e	150	2595
W. R. Ramsey, Shipley 1, nw ne sw, 21-5n-8e	*	3000
Conservative Oil Co., Norris 1, nec nw, 28-5n-6e	*	2709
POTTAWATOMIE COUNTY—		
Wilcox Oil & Gas Co., Pickard 1, sec sw, 32-11-2e	*	4500
Clark, Edwards et al, School Land 1, nec sw, 16-10-5e	*	4792
SEMINOLE COUNTY—		
Ramsey Oil Co., Gully 1, nw se ne, 18-5n-8e	575	2608
La. Oil Ref. Co., Reed 3, sw ne ne, 18-5n-8e	604	2670
Punluste, swc, 8-5n-8e	1180	2632
Barnsdall Oil Corp., Hotulke 1, se nw se, 22-7-6e	70	4205
Sinclair O. & G. Co., Taylor 1, sw ne ne 10-8-6	2080	4162
Jarvis & Holmes et al, Butner 1, ne sw sw, 10-9-8	60	3259
Roxana Pet. Corp., Strothers 2, ne sw ne, 3-9-6	150	4657
Pure Oil Co., Aldridge 6, nec sw, 3-9-6	50	4506
Indep. O. & G. Co. & Margay Oil Corp., Gaines 2, nec, 11-9-5	100	3538
Twin State O. Co., Hearn 4, nw ne se, 2-9-5	800	4365
Shaffer O. & R. Co., Clark 6, ne se sw, 1-9-5	1025	3586
Barnsdall O. Corp., Sango 1, sec nw, 1-9-5	254	4331
Ingram 2, nw sw sw, 1-9-5	475	4599
Gypsy Oil Co., Cudjo 4, swc ne, 4-9-6	*	4698
Indep. O. & G. Co., Knapp 8, se nw ne, 8-9-5	*	4504
Magnolia Pet. Co., Edmundson 4, ne sw sw, 3-9-5	*	4275
Shaffer O. & R. Co., Clark 3, sec sw, 1-9-5	*	4570
STEPHENS COUNTY—		
Touhy et al, Edwards 2, sec sw se se, 3-3s-5w	10	1052
Harry Hanbury, Taliaferro 6, nwc se nw sw, 27-1s-8w	10	2210
David Malernee, Burke 1A, nw ne ne, 34-1s-8w	*	2300
TULSA COUNTY—		
E. B. George et al, Brown 1A, nwc sw, 7-17-13e	25	1876
Enfisco Oil Corp., Allen 1, c w½ nw, 14-17-13e	*	1980
Holmes et al, Ragan 1, sec ne se, 22-19-10e	*	2455
WAGONER COUNTY—		
Ford & Silsbee, Colbert 1, csl sw nw, 3-16-18e	*	500
Peterson & Young, Marshall 1, c sw se, 23-16-16e	*	1015
A. Chapman, Colbert 2, swc ne se, 19-18-18e	*	910
Linden & Davis, Taylor 1, sec nw sw, 20-18-15e	*	1300

KANSAS

Company, Well and Location	Initial Production Bbls.	Depth
BUTLER COUNTY—		
Rosenthal et al, Shaffer 9, swc se se, 4-27-6e	150	3141
Blankenship Pet. Co., Pyle 1, swc ne, 22-26-4e	*	3438
COWLEY COUNTY—		
Boggs Drlg. Co., Henderson 1, c ne nw, 5-33-5e	¶1	635
Derby Pet. Co., Seaman 1, nec se ne, 32-30-3e	*	2204
Neeley O. & G. Co., Bell 1, c nw ne, 5-33-5e	*	3180
Enghran & Wilson, Vicory 1, c sw se, 7-35-3e	*	785
GREENWOOD COUNTY—		
Theta Oil Co., Fankhouser 4, swc se, 23-22-12e	100	1719
Fankhouser 5, nec se sw, 23-22-12e	24	1682
Empire G. & F. Co., Ott A6, sec ne nw, 25-22-12e	150	1707
Ott A7, swc nw nw, 25-22-12e	125	1711
Schwab 9, sec ne, 25-22-12e	420	1715
Simmons & Rhodes, Schwab 1, swc ne se, 30-22-13e	150	1701
Marcus et al, Freeman 1, nec se sw, 6-24-11e	45	1840
Culp et al, Smith 1, c ne se, 28-27-13e	*	1575
McPHERSON COUNTY—		
Lamar et al, Lamar 1, sec sw, 1-17-3w	*	3600

(Continued on page 68)

Company, Well and Location	Initial Production Bbls.	Depth
MARION COUNTY—		
Phillips Pet. Co., Mowrer 1, nec sw ne ne, 22-17-4e	40	2440
Givens et al, Ucker 1, swc ne, 31-17-4e	*	2703
SUMNER COUNTY—		
Roxana Pet. Corp., Bussard, nwc, tr 2, City of Winfield, 14-32-2e	156	2103
WOODSON COUNTY—		
Young et al, Otto 1, swc nw nw, 21-23-14e	20	1643

CALIFORNIA

CAT CANYON—		
Magenheimer Securities Co., 1, 30-9-32	350	3415
DOMINGUEZ—		
Union Oil Co., Callender 1, wo	100	4185
HUNTINGTON BEACH—		
J. F. Garliepps, Andrews 2	500	3950
KERN FRONT—		
Associated Oil Co., 3, 23-28-27	200	2385
George F. Getty, McDougall 4, 26-27-28	240	2160
General Pet. Corp., Sill 6, 26-28-27	160	2175
LONG BEACH—		
Rio Grande Oil Co., Municipal b-1	380	5663
Belsa Chica Oil Co., Mutual 4	2500	5965
VENTURA—		
Shell Co., Edison 20	2100	6822

EASTERN STATES

PENNSYLVANIA

GREENE COUNTY—		
Manufacturers L. & H. Co., Bryan 2	*	3085
Richhill O. & G. Co., Rose 1	2	2935
Phillips & Donan, Seals 1	*	3500
Boundy & Co., Cooper 1	*	3143
CLARION COUNTY—		
Whitling Bros., Whitling 1	10	....
Shorts & Jermerette, Fisher 1	¶½	....
BEAVER COUNTY—		
Galey & Mellon, Carney 2	¶1¼	....

WEST VIRGINIA

RITCHIE COUNTY—		
Asaron Oil Co., H. & S. Realty 8	10	....
Park Bowser, J. Grimm 3	¶1	1810
Del Rio Oil Co., Storrs 6	15	1883
Astron Oil Co., Stursburg 8	5	....
GILMER COUNTY—		
James Tierbym, Tierby 3	¶1½	....
Hope Const. & Ref. Co., Wilt 1048	6	1720
Hope Natural Gas Co., Wilt 7176	1	2085
Satterfield & Co., F. N. Gainer 1	¶¼	1881
ROANE COUNTY—		
Heck Oil Co., Conley 11	130	....
United Fuel Gas Co., Ashley & Co. 1857	¶1½	2153
United Carbon Co., Keene 2	¶1½	1650
CALHOUN COUNTY—		
C. B. Lewis & Co., White 1	¶1½	1995
Starcher & Smith, Slider 1	¶¼	1885
L. L. Lynch, Dollman-Kingsbury 2	*	2127
HARRISON COUNTY—		
Aizpura Oil Co., Barnes 7	¶1	2280
White Top Oil Co., Allen 7	¶1¼	2268
MARION COUNTY—		
Mack Bell O. & G. Co., Prickett 1	¶1¼	1953
Owens Bottle Mach. Co., North Central Coal Co. 1	¶1½	2545
DODDRIDGE COUNTY—		
George Ahouse, Baptist Parsonage Lot 1	*	1834
Ira D. Cox, Spurgeon 1	*	....
CABELL COUNTY—		
Aetna O. & G. Co., J. M. Lewis 1	*	3620
H. R. Hatfield 2	¶¼	....
PLEASANTS COUNTY—		
Geo. Pickens & Co., Keister Hrs. 2	10	....
TYLER COUNTY—		
C. W. Knowlton & Co., Williamson 1	4	....
LEWIS COUNTY—		
Carnegie Nat. Gas Co., Logan 1	1	1810
JACKSON COUNTY—		
M. E. Horseman & Co., Hutchinson 1	*	2355
MINGO COUNTY—		
Public Gas Corp., Logan Channel Coal Co. 29	*	1220
PUTNAM COUNTY—		
Tampico Oil Co., Wirt 1	¶1½	....

TENNESSEE

CLAY COUNTY—		
Carnahan Oil Co., Moredock 2	960	750

KENTUCKY

DAVIESS COUNTY—		
Creek Drlg. Co., Brown 1	300	....
Wood Oil Co., Sutton 1	25	....
Ohio Oil Co., McLemore 1	*	1500
Bert Thompson, Pulliam 2	*	....
OHIO COUNTY—		
Creek Drlg. Co., Bartlett Hrs. 6	150	....
Bartlett Hrs. 7	150	....
Cumberland Pet. Co., Robt. Hamilton 3	319	....
Robt. Hamilton 4	50	....
Mecca Oil Co., Wells 10	150	710
Daugherty Interests, Rhodes 6	100	795
Wood Oil Co., Duke 2	20	466
BARREN COUNTY—		
Sampson Oil Co., Casey Jones 6	400	....

SOUTHEASTERN OHIO

NOBLE COUNTY—		
Way Wickers & Co., Crock 2	¶¼	1530
JEFFERSON COUNTY—		
Blackburn & Co., Castner 1	*	....

CENTRAL OHIO

ASHLAND COUNTY—		
Ohio Fuel Gas Co., Grim 1	¶2	....
Cookley 1	¶1	....
Logan Gas Co., Cline 1	¶¼	....
Trumpower 1	¶¼	....
CUYAHOGA COUNTY—		
Hulse & Kundtz, Eldred 3	¶½	....
Paddock 1	¶½	....
John Arthur, Hurd 1	¶½	....
Goff Bros., Dreyer 2	¶1	....
HOCKING COUNTY—		
Hope Const. & Refg. Co., Mowrey 1	¶¼	2852
Rodgers Hrs., Rodgers 1	*	3750
Duffey O. & G. Co., Duffey 1	*	3000
PERRY COUNTY—		
Ohio Valley Pet. Co., Springer 1	85	3560
Daniel L. Melick, Buckner 1	1	....
LICKING COUNTY—		
Dexter O. & G. Co., Cotterman 8	3	745
HOLMES COUNTY—		
East Ohio Gas Co., Roby 1	¶2	....
ATHENS COUNTY—		
Athens State O. & G. Co., State 10	¶1	1147

NORTHWESTERN OHIO

HANCOCK COUNTY—		
Bath Township Oil Co., Bryan 8	35	1428
SANDUSKY COUNTY—		
Lindy Oil Co., Boyer 3	8	1342
AUGLAIZE COUNTY—		
Boyd & Stelzer, Benton 5	5	1188
MERCER COUNTY—		
John Karsh, Karsh 1	¶¼	1132
WOOD COUNTY—		
Charles F. Zeising & Co., Metzger 1	*	1268

INDIANA

VIGO COUNTY—		
Ohio Oil Co., Collins 2	75	2191
PIKE COUNTY—		
William Bell & Co., Hyneman 1	*	1543

ILLINOIS

WABASH COUNTY—		
Adams Corner Oil Co., Madden 14	¶1	1098
Foreman & Co., Pritchard 1	*	1620
LAWRENCE COUNTY—		
Ohio Oil Co., Booe 49	3	913

ARKANSAS

OUACHITA COUNTY—		
Standard Oil Co.'s Goodwin B-1, 5-16-15	¶3	2648

LOUISIANA

BOSSIER PARISH—		
North La. Gas Co., Bain 1, 31-23-11	¶33	3076
CADDO PARISH—		
The Texas Co. Herndon 8, 14-21-15	75	3705
DESOTO PARISH—		
J. H. Askews, Richardson 3 25-13-11	30	2551
MOREHOUSE PARISH—		
Moody & Seagrave, Wolfe 1, 13-20-4e	¶7	2168
RICHLAND PARISH—		
Moody & Seagrave, Hemler C-1, 29-16-6e	¶56	2503
La Flouer 1, 18-16-6e	¶54	2465
SABINE PARISH—		
Seip et al, Moore 1, 32-10-12	20	3290
WEBSTER PARISH—		
Humble, Bobb 5, 14-21-10	¶3½	4596

TEXAS

EAST TEXAS

HARRISON COUNTY—		
State Line O. & G. Co., Mrs. Z. Abney 4, W. R. Anderson sur	¶2½	956
Magnolia, Sol Oden 1, E. F. Mitchesson sur	¶1½	2348

NORTH TEXAS

ARCHER COUNTY—		
Burleson & Chenault, Parkey 1	*	1605
Consolidated Oil Co., Kinder 1	*	1350
Fain-McGaha Oil Corp., Wilson 1-A	120	1565
Holcomb & Jones, Hawley 3	*	780
D. O. Johnson et al, Wilson 1-A	110	1563
Grisham & Panhandle Ref. Co., Farmer 1-C	*	1570
Rose & Atlantic Oil Prod. Co., Benson 1	3	857
BURKBURNETT—		
Ascot Co., Roller 2-A	*	408
C. H. Lebow et al, Schultz 12	†	1672
COOKE COUNTY—		
W. J. Green et al, Campbell 3	*	788
Hedrick-Camp Drlg. Co., Lynchstahl 1	10	1380
ELECTRA—		
L. P. Hammond et al, Waggoner Bros. 1	*	1952
Perkins-Cullum, Beaver-Electra 9	*	1650
The Texas Co., Waggoner 346	*	1055
K-M-A AND IOWA PARK—		
Lomax et al, Chilson 1	*	1289
Panhandle Ref. Co., Warren 2	*	1650
Warren 3	*	1655
E. J. Stump & Co., Chilson 1-A	*	1851
Shappel Oil Co., K. & K. 13-A	20	1630
Wolfe & Grayce Oil Co., Daume 4	*	1873
MONTAGUE COUNTY—		
Arco Oil Co., Loy 3	30	819
Bridwell & Heydrick, Salmon 4-A	50	1177
Gulf Prod. Co., R. W. Cunningham 13	50	921
Pure Oil Co., Loy 4	25	818
The Texas Co., Hinton 3	10	795
YOUNG COUNTY—		
Alexander et al, Johnson 2	*	612
Kleiner et al, Langston 2	35	583
Roberts Oil Corp., Thomas 1	*	1052
Seigler et al, Bloodworth 1	*	908

CENTRAL WEST TEXAS

BROWN COUNTY—		
Atlantic Oil Prod. Co., Tullos 1	60	1323
Blanchard et al, Kelsey 2	*	1350
Cranfill-Reynolds & Sun Oil Co., Newton 2	60	1153
Gibson & Johnson, George 1	*	1605
Humble O. & R. Co., Allen 4-A	15	1121
Logan-Carter, Mansfield 1	*	1407
Mitchell et al, Allcorn 2	*	1157
Pandem Oil Corp., Curry 4-B	40	1113
Randall et al, McDaniel 1	*	915
Scrievnor et al, Turner 1	*	1275
CALLAHAN COUNTY—		
Brown & Co., Edwards 3	*	1665
COLEMAN COUNTY—		
M. G. Cheney & Continental Oil Co., Gardner 1	170	2306
Cunningham et al, Jennings 2	*	1200
Manhattan Oil Co., Overall 1	30	2500
EASTLAND COUNTY—		
Goodwin et al, Parker 1	¶18	3030
Gulf Prod. Co. J. W. Horn 1	¶½-25	1302
PALO PINTO COUNTY—		
Dixie Drilling Co., Lane 1	*	2250
SHACKELFORD COUNTY—		
Albany Oil Co., Reynolds 7	*	1335
McGee et al, Elliott 1	*	1000
Roeser-Pendleton & Marland Oil Co., Cook 1-A (Sec. 62)	700	1350

TEXAS PANHANDLE

BAILEY COUNTY—		
Humble O. & R. Co., Fuqua 1	*	4100
GRAY COUNTY—		
Neudigate et al, Chapman 1	*	3014
Phillips Pet. Co., W. Jackson 2	100	3026
Riley-Jackson 1	125	3010
SHERMAN COUNTY—		
Phillips Pet. Co. & Prairie, Price-Fuqua 1	*	4001
WHEELER COUNTY—		
Mid-Kansas O. & G. Co., J. F. Coates 1	¶17	1950
Woodtex Oil Co., C. A. Linkey 2	¶58	2180

(Continued on page 70)

PERMITS GRANTED FOR NEW WELLS

ARKANSAS

UNION COUNTY—Rhodes Te's Union Saw Mill 1, 14-19-11, 200 ft n and 200 ft w of se c ne sw. Simmons et al's Green 1, 3-16-16, swc Lot No. 3 in nw.

LOUISIANA

BOSSIER PARISH—J. S. McCullough Tr., Shreveport, Hodges 6, 25-16n-12w, 475 ft n and 1163 ft w of center. The Palmer Corp. of La., Shreveport, W. H. & C. B. Hodges B-9, 25-16n-12w, 425 ft n and 2030 ft e of sw c nw.

CADDO PARISH—Simmons & Harrell, Fort Worth, Texas, Mattie Myers 1, 21-17n-13w, 2400 ft s and 950 ft e of nw c.

CAMERON PARISH—Calcasieu Oil Co. Inc., Magnolia Pet. Co. and Union Sulphur Co., Houston, Watkins 3, 24-12s-10w, 2746 ft e and 1113 ft s of nw c.

CLAIBORNE PARISH—El Dorado Chief O. & G. Co., New Orleans, Jones 1, 8-20n-6w, 100 ft s and 640 ft w of ne c sw se.

MOREHOUSE PARISH — Moody & Seagraves, Houston, Wolff-McInnis 1, 13-20n-4e, 1535 ft w and 799 ft n of se c.

OUACHITA PARISH — Hatcher & Evans, Monroe, Hatcher 7, 21-19n-4e, 592 ft s and 724 ft e of nw c. The Palmer Corp. of La., Shreveport, Cole 3, 36-20n-4e, 1980 ft n and 626 ft e of sw c sw.

RICHLAND PARISH—W. C. Feazel, Monroe, Noble 1, 36-16n-5e, 4917 ft w and 660 ft s of ne c se. Southern Carbon Co., Monroe, Sartor 1, 9-16n-6e, 1320 ft n and 1980 ft w of se c. Woodley Pet. Co. and Triangle Drilling Co., Shreveport, Osborne 1, 3-17n-7e, 660 ft n and 200 ft e of sw c se.

WEBSTER PARISH—Magnolia, Shreveport, Bailey 1, 29-23n-9w, 1220 ft s and 660 ft e of nw c ne. Palmer Corp of La., Shreveport, Mixon 1, 22-21n-10w, 1975 ft e and 990 ft n of sw c sw.

OKLAHOMA

BRYAN COUNTY—Magnolia, Marshall 2, swc nw nw sw, 26-5s-7e.

CARTER COUNTY—Magnolia, Ragsdale 1, swc, 5-2s-3w.

COAL COUNTY—Galbreath et al 1, swc se, 24-1n-9e.

CREEK COUNTY—Elson & Detrick, Merten 1, sec ne sw 27-14-10e. G. D. Roberts, Penoske 1-A, swc 2-15-10e. Winemiller et al, Deenum 2, swc ne 4-17-11e. Sterling O. & G. Co., Deenum 1, nec sw 4-17-11e. S. J. Smith et al, Fife 5, nwc se 4-17-11e. Skelly Oil Co. et al, Dickson 1, nwc sw 19-17-10e. Jackson & Wise, Thomas 3, swc nw 13-17-10e. J. T. Wood et al, Charcotenne 3, nec nw se 21-17-8e. Pure Oil Co., Drew 12, cnl se se 26-18-12e. Gled Oil Co., West 1-A, nec sw nw, 17-18-9e. Devonian Oil Co., Bigpond 6, swc nw sw 36-15-7e.

GARVIN COUNTY—Magnolia, Ringer 2, sec nw ne ne 15-1n-3w.

GRADY COUNTY—Okla. Gas Utilities Corp., Farwell 11, ne se ne 26-5n-8w; Farwell 10, se ne ne 26-5n-8w; Farwell 9, nec 26-5n-8w. Meridian Gas Co., Farwell 5-A, nw ne se, 23-5n-8w.

GRANT COUNTY—Tom Palmer et al, Lupton 1, nec sw sw se 26-28-3w.

JEFFERSON COUNTY — Heydrick et al, Spring 1, sw nw sw 24-6s-6w.

KAY COUNTY—Royal O. & G. Co., Brazelton I, c nw sw 5-27-1e. Nehr & Wilson, Bersche 1, swc se 4-27-1e. Industrial O. & G. Co., Walker 2, c se ne 2-27-1w. Royal O. & G. Co., Kelle 1, c sw se, 33-28-1e.

McINTOSH COUNTY—Beggs O. & G. Co., Bray 3, c se se 3-12-15e.

MUSKOGEE COUNTY—Hale Ford Oil Co., Clark 3, swc se nw se 6-14-19e. J. F. Blackwood et al, Bennett 1, sec ne sw 6-14-19e. John Paul et al, James 3, swc nw sw 17-14-17e. C. D. Bradley et al, Rogers 1, nwc se 21-15-19e. D. L. T. Oil Co., Mackey 2, sec sw sw 9-15-18e. Bryan & Emery, Lowery 1, nwc sw nw sw 9-15-15e.

NOBLE COUNTY—John White et al, Cooper 1, c nw sw 5-24-1w.

WEEKLY COMPARISON OF NEW WELLS

Following is a condensed table giving a comparison of permits or locations made for new wells during the past year in Kansas, Oklahoma, Arkansas, Louisiana, Texas, California and the Mountain States:

	Week ending Feb. 25	Previous week	Total this month	Total this year	This week last year	This month 1927	Total same date 1927	Year total 1927
Arkansas	2	3	11	22	..	29	70	329
California	24	21	95	183	20	110	233	1,226
Louisiana	13	10	42	92	25	78	161	812
Kansas	47	24	111	197	31	121	271	972
Oklahoma	70	50	231	430	67	335	885	3,702
Texas	101	173	502	924	173	928	2,013	8,665
Mt. States	..	..	..	..	20	54	107	494
Totals	257	281	992	1,848	336	1,655	3,740	16,149

OKFUSKEE COUNTY—Schermerhorn, Norris 1, c se nw 20-10-9e. Minnehoma Oil Co., Holmes 3, cnl ne nw 30-11-11e. Riverland Oil Co., M. Barnett 2, csl se sw, 19-11-11e. Henry Oil Co. et al, Sears 1, sec ne 5-11-11e.

OKMULGEE COUNTY—Peterson & Darby Pet. Co., Asbury 1, nes se 8-15-14e. C. E. Love et al, Brown 2, nec se ne se 15-15-12e. Thompson & Black, Scott 1, sec nw se 28-15-11e. Harsha & Delaney, Harrison 1-A, swc nw 35-16-14e.

OSAGE COUNTY—I. T. I. O. Co., 388, nwc se 13-26-10e. Carter Oil Co. 9, sw ne se, 3-26-6e; 8, nw se se 3-26-6e. Osage Oil Synd., 1, nwc ne 1-21-8e.

PONTOTOC COUNTY—W. R. Ramsey, Milner 4, sec 18-5n-8e. Lewis Clark Pet. Co., Walton 1, c se se 7-3n-7e. Homaokla Oil Co., McCall 9, nec 17-5n-8e. C. B. Shaffer, Yoakum 6, nwc 16-5n-8e.

POTTAWATOMIE COUNTY—T. B. Slick, School land 1, sec 16-6n-5e. Wilcox O. & G. Co., Wyatt 1, se ne nw 10-7-4e. I. T. I. O. Co., Sullivan 2, nwc se 25-7n-3e.

SEMINOLE COUNTY — Snowden & McSweeney, Epply 2, nwc ne, 15-10-8e. Magnolia Pet. Co., Hyde 2, ne se nw, 13-9-5e. Sinclair O. & G. Co., W. Taylor 2, nw ne ne, 10-8-6. W. Taylor 3, se ne ne, 10-8-6. Dixie Oil Co., Lizzie 1, sw nw nw, 11-8-6. Twin State Oil Co., Jones 4, nec se, 11-8-6; Marshall 1, se sw nw, 7-6-8e. Mid Continent Pet. Corp., Fleet 3, ne nw se, 8-5n-8e. Magnolia, Reed 1, nwc, 17-5n-8e.

STEPHENS COUNTY — Carter Oil Co., Morgan 2, swc nw ne, 32-1n-8w. Big Twelve Oil Co., Taliaferro 5, sec sw, 27-1s-8w. Amerada Pet. Corp., Hanson 2, swc se se sw, 12-1s-4w. Pace et al, Absner 7, nwc, 7-3s-7w.

TULSA COUNTY—Berry et al, Funk 3, nwc ne, 3-16-12e. Holmes et al, Unallotted 1, nec 31-19-11e. Glidden & Holmes, Johnson 1-A, swc ne, 15-19-11e.

WAGONER COUNTY — W. McDougal, J. Dan 1, sec nw nw, 21-17-15e.

KANSAS

BUTLER COUNTY — Marland Oil Co. & Phillips Pet. Co., Stephenson 1, nec se, 35-23-3e. Fleming et al, Brainerd 1, nec nw, 22-24-3e. Federal Oil Co., Drum-Bitler 12, cnl ne, 31-26-8e. Shawver et al, Nelson 1, nec se, 8-29-8e.

COWLEY COUNTY—Herron et al, Marshall 1, swc ne, 36-30-6e. Lewis Gas Prod. Co., Pearce 1, sec sw se, 30-31-6e. Pryor, Lockhart et al, Drury 2A, nwc ne ne, 31-31-6e. Indep. O. & G. Co. et al, Swenson 1, swc nw sw se, 15-32-4e. Mission Oil Co., Evans 1, lot 9, blk. 42, City of Winfield, 22-32-4e. McNabb et al, Wallace 2, lot 5, City of Winfield, 22-32-4e. McNabb et al, Mattison 1, lot 5, blk. 44, City of Winfield, 22-32-4e. Barnsdall Oil Corp., Russell 1, sec ne nw se 15-33-4e.

DICKINSON COUNTY — Johnson et al, Schlessner 1, c sw ne, 18-16-4e. Staats et al, Smith 1, nec se sw, 23-16-4e.

GEARY COUNTY—Pioneer Pet. Co., Chase 1, sec 10-12-7e.

GREENWOOD COUNTY—Empire O. & R. Co., Schwab 10, nec se 25-22-12e. Darby Pet. Co., Schwab 9, sec nw, 30-22-13e. Empire O. & R. Co., Schwab "BB" 1, nwc sw, 30-22-13e; Schwab "B" 2, nec nw sw, 30-22-13e; Schwab "B" 3, nwc ne sw, 30-22-13e; Schwab "B" 4, nec sw, 30-22-13e. Skelly Oil Co., Schwab 1, swc ne, 30-22-13e. Tidal Oil Co., Schwab 1, sec nw se, 30-22-13e; Schwab 2, swc nw se, 30-22-13e; Schwab 3, nwc se, 30-22-13e; Schwab 4, nec nw se, 30-22-13e, Nathan et al, South 1, nec nw se, 36-23-10e. Davis et al, Olson 1, nec se, 6-25-9e. Empire O. & R. Co., Johnson 1, sec ne ne 8-25-12e. Hood et al Russell 1, c se se, 15-26-11e.

McPHERSON COUNTY—Rosenthal et al, Johnson 1, c se se, 30-18-2w.

MARION COUNTY—Shearer, Braden et al, Wright 1, swc nw se, 14-18-4e.

MORRIS COUNTY—Madison et al, Barkin 1, nwc sw se, 29-15-5e. Farrell et al, Albright 1, swc se ne, 20-16-5e.

SEWARD COUNTY—Ash et al, Son 1, nec, 14-33-33w.

SUMNER COUNTY — Roxana Pet. Corp., Sleigh 4, swc se nw sw, 25-31-2e; Shore 6 "B," nwc se nw sw, 25-31-2e. Washahoma Oil Co., Busard 1, nec se ne se, 26-31-2e. Roxana Pet. Corp., Taton 5, swc ne nw, 36-31-2e; Townlot 10, lot 4, blk. 84, City of Oxford, 11-32-2e. Noble et al, Sheek 1, Tract 4, City of Oxford, 14-32-2e. Wasson et al, Gassoway 7, swc se sw, 14-32-2e. Roxana Pet. Corp., Fritz 3, Out Lot 26, City of Oxford, 14-32-2e; Barnes 2, sec sw sw, 14-32-2e; Emerich 11, Midland Valley Right-of-Way, City of Oxford, 14-32-2e. Palmer & Barnsdall Oil Corp., Weinrich 3, nwc ne nw, 23-32-2e; Wenrich 4, nec nw nw 23-32-2e.

TEXAS

ARCHER COUNTY—Gibson & Johnson, Abilene, Wilson 1, S 5, SP Ry sur No. 2, 230 ft from n and 900 ft from w line. Consolidated Oil Co., Wichita Falls, Kinder 1, Clark & Plumb sur, 150 ft from n and e lines. D. O. Johnson, Wichita Falls, Wilson 2, B 26, Geraldine sur, 300 ft s of No. 1; Wilson 1, B 19, Geraldine sur, 150 ft from s and e lines. Pois & Johnson, Wichita Falls, Jackson 1, W. R. Aldridge sur, 150 ft from s and e lines. Wilson & Gardner, Wichita Falls, Parrish 1, Amer. Trib. sur, 150 ft from s and e lines. P. F. Gwynn, Wichita Falls, Birdwell 1, 2418 TE&L sur, 450 ft from e and 150 ft from s line.

BROWN COUNTY—M. L. Richards, Wichita Falls, Hutton 1, J. A. Nobles sur, 150 ft from s and e lines; Curry 3, E. L. Bates No. 637 sur, 462 ft from w and 150 ft from s line. Phillips Pet. Co., Bartlesville, Okla., Hickman 9, S 783, T. Benson sur, 150 ft from n and 460 ft from e line. W. T. Daniels, Brownwood, Sykes 1, S 37, HT&B sur, 150 ft from s and w lines. F. D. Williamson et al, Brownwood, Eddington 2, No. 141 R. Mitchell sur, 150 ft from n and 167 ft from w line. Cranfill & Reynolds, Cisco, Smith 20, S 3, SA&MG sur, se cor. H. J. Uhl, Brownwood, Shelton 1, D. S. Camp sur, 200 ft from e and 150 ft from s line. Pandem Oil Co., Wichita Falls, Curry 1, E. L. Betts sur, 2016 ft from n and 1083 ft from w line; 2, 783 ft from n and 1083 ft from w line; A. L. Curry 6,

E. L. Betts sur, 466 ft from w and 150 ft from n line. G. P. Mitcham, Cisco, Newton 1, Honeycutt sur, 150 ft from s and e lines. Lamb & Shaw, Brownwood, Perry 1, No. 624 J. Kinney sur, 150 ft from n and w lines; 2, 300 ft se of No. 1.

BRAZORIA COUNTY — Rycade Oil Corp., Houston, Nash 13, T. Allsberry sur, 2375 ft from w and 350 ft from s line.

BORDEN COUNTY—Dixon Creek Oil Co., Amarillo, Johnson-Clayton 1, S 2, B 31, T&P sur, 150 ft from s and e lines.

CALLAHAN COUNTY—Meredith & Benton, Cisco, Pippen 1, 3166 TE&L sur, 875 ft from w and 150 ft from s line. J. F. West, Cisco, Williams 5, 2269 TE&L sur, 300 ft w of No. 4; 6, 150 ft from n and 1050 ft from e line; 7, 150 ft from s and 1050 ft from e line. Kingwood & Mee, Cisco, Sharry 1, B 336, UCSL sur, 330 ft from s and e lines.

CLAY COUNTY—Comac Drilling Co., Wichita Falls, Hawthorne 1, B 17, C. F. Stanley sur, sw cor.

COMANCHE COUNTY—Fred Foote et al, Sipe Springs, Westbrook 1, S 50, D&D Asy sur, 200 ft from n and w lines.

COLEMAN COUNTY — W. T. Daniels, Brownwood, Moody 1, No. 665 J. Scott sur, 150 ft from n and 660 ft from e line.

EASTLAND COUNTY—Root & Fehl, Eastland, Watson 4, S 37, B 4, H&TC sur, 350 ft from n and 1600 ft from w line. C. M. Root, Eastland, Stokes 1, S 37, B 4, H&TC sur, 660 ft from n and e lines. Cranfill & Reynolds, Cisco, Turner 2, S 30, B 2, H&TC sur, 150 ft from n and 740 ft from w line. Whiteside & Kendall, Gorman, Collins 1, S 3, B 2, H&TC sur, 250 ft from n and w lines.

FOARD COUNTY—Marland Oil Co., Fort Worth, Minnick 1, S 74, H&TC sur, center of ne¼ of Sec. 74.

GRAY COUNTY—McAuley et al, Pampa, Morris 1, S 3, B 26, H&GN sur, 330 ft from s and e lines. Danciger O. & R. Co., Ft. Worth, Crank 1, S 163, B e, I&GN sur, 330 ft from s and w lines. H. K. Tobias, Amarillo, Taylor 1, S 10, B B2, H&GN sur, center.

GLASSCOCK COUNTY — Tate, Weekly & Tubb, Odessa, Roberts 3, S 156, B 29, W&NW sur, sw cor. F H E Oil Co., and Flemming & Kimbell, Sherman, Roberts 3A, S 156, B 29, W&NW sur, 1210 ft from e and 150 ft from s line; 4A, 880 ft from w and 330 ft from s line; E-1, S 136, 200 ft from s and w lines; D-2, S 136, 200 ft from e and 250 ft from s line.

GARZA COUNTY—Marland Oil Co., Fort Worth, Pippen 1, S 1210 TE&L sur, center of nw¼.

HARDIN COUNTY—Acorn Oil Co., Beaumont, Paraffine 66, B 10, Knight sur, 185 ft sw of No. 17. Ada Bell Oil Co., Batson, Texas Co. 118, J. Knight sur, 23 ft from w and 62 ft from ne line. Minor Oil Co., Beaumont, Fee 82, S. Jackson sur, 250 ft n of center of s line.

HARRISON COUNTY — Magnolia, Dallas, Vincent 2, R. W. Bedford sur, 330 ft from n and e lines.

HOWARD COUNTY—Owen-Sloan Oil Co., Colorado, Roberts 3, S 136, B 29, W&NW sur, 197 ft from n and 200 ft from w line.

JEFFERSON COUNTY — Gulf, Houston, Weed 13, J. Douthitt sur, 50 ft from se and 30 ft from sw line. Freeport Sulphur Co., Freeport, Texas Explo Co. 11, B 8, S. Eaton sur, 750 ft from n and 600 ft from w line.

JONES COUNTY—Rhodes & Highers, Breckenridge, Howell 1, S 20, B 19, T&P sur, nw corner.

MONTAGUE COUNTY—Continental Oil Co., Wichita Falls, Maddox A 28, B 13, H. S. Arnold sur, 150 ft from s and w lines. Petroleum Prod. Co, Wichita Falls, Howard 2, F. Robertson sur, 50 ft e of No. 1. Bridwell Oil Co., Wichita Falls, Salmon 5, F. Roberts sur, 324 ft e of No. 4.

MILAM COUNTY—W. A. Jones, Minerva, Casparis 2, T. J. Chambers sur, 150 ft from n and e lines. Coffield & Hale, Rockdale, Isaacs 1, T. J. Chambers sur, 150 ft from s and w lines.

MATAGORDA COUNTY — W. L. Pearson, Corpus Christi, Smith 1, B 14, H. Y. Parker sur, 150 ft from n and w lines.

MITCHELL COUNTY—E. S. Boehn Drilling Interests, Ft. Worth, Smith 1, S 90, B 29, W&NW sur, center.

NACOGDOCHES COUNTY—Union Sulphur Co., Sulphur, La., Lambert-Wells 2, 325 ft from w and 308 ft from n line.

NAVARRO COUNTY—Webb, Bryant & Huddleston, Corsicana, Harvard 3, J. D. Mathes sur, 150 ft from n and 450 ft from w line.

PALO PINTO COUNTY—Britton, Gordon & Wickens, Strawn, Strawn Coal Co. 2, I. Ryan sur, 1850 ft from n and 4300 ft from w line.

PANOLA COUNTY—Nat. Gas Prod. Co., Shreveport, La., Adams 2, E. Bracken sur, 330 ft from n and e lines. Texas Co., Houston, Adams B8, I. Hatcher sur, 500 ft se of No. B-4. S. H. Gardner, Waco, Ragmore 2, B. C. Jordan sur, 150 ft from s and e lines; 3, 270 ft from n and 150 ft from w line.

PECOS COUNTY—Olean Pet. Co., Bristow, Okla., Sherbino 1, S 31, B C4, GC&SF sur, center of nw¼. Skelly Oil Co., Tulsa, Tippett 1, S 108, B 19, TC Ry sur, 340 ft from e and 359 ft from s line. California Co., Colorado, Yates 14, S 34, B 194, GC&SF sur, 560 ft from w and 1240 ft from s line; 15, 1954 ft from w and 1217 ft from s line.

RUNNELS COUNTY—R. B. Summers, Ballinger, Reese 1, DL&C sur, 720 ft e and 660 ft from s line. Marland Oil Co., Fort Worth, Smith 1, S 121, ET Ry sur, center of Sec. 121.

SHACKELFORD COUNTY—J. F. Dingee, Ft. Worth, Mathews 1, S 29, ET Ry sur, 150 ft from n and w lines. Meredith & Benton, Cisco, Thorpe 1, S 7, Blind Asy sur, 150 ft from n and e lines. Kingwood, Mee & Daniels, Abilene, Gorsuch 2-A, S 82, B 13, T&P sur, 220 ft from n and w lines.

SAN SABA COUNTY—E. R. Marts, Dallas, Becker 1, No. 57 sur, 1200 ft from e and 600 ft from s line.

WICHITA FALLS—Shappell Oil Co., Wichita Falls, Kemp & Kempner 14, B 18, WVFL sur, 300 ft w of No. 9. Practor Oil Co., Wichita Falls, Ard 1, B 17, K & K sur, se corner. C. A. Everts, Wichita Falls, Cooper 2, B 292, Wag. Col. sur, 150 ft from n and 125 ft from w line. Cotton & Grayce Oil Co., Wichita Falls, Kemp & Kempner 17, B 45, W V F L sur; 16; 15.

WILBARGER COUNTY—Texas Co., Wichita Falls, Waggoner B-8, S 16, B 4, H&TC Ry sur, 205 ft from n and w lines. Consolidated Oil Co., Wichita Falls, Wheeler 1, S 56, B 4, H&TC sur, 150 ft from n and e lines; Bates 1, S 42, B 2, 1340 ft from n and 2003 ft from e line; Waggoner 1, S 24, B 2, 150 ft from n and e lines. Cosden & Consolidated Oil Co., Wichita Falls, Waggoner 10, S 57, B 4, H&TC Ry sur, 300 ft s of No. 5.

WEBB COUNTY—Cole Pet. Co., Laredo, Benavides 52, S 412, B 5, GC&SF sur, 322 ft e of No. 51.

WINKLER COUNTY — Roxana Pet. Co., South Bend, Hendricks C6, S 29, B B5, 990 ft from e and 330 ft from s line; C7, 990 ft from w and 330 ft from s line. Pure Oil Co., Mexia, Hendricks 6, S 41, B B5, School sur, 1988 ft nw of No. 1.

WHARTON COUNTY—Weed-Gayle Oil Co., Beaumont, Bay 16, S. F. Austin sur, 610 ft from nw and 370 ft from ne line.

WHEELER COUNTY—L. W. Rook, Shamrock, Smock 1, S 5, B 24, H&GN sur, 660 ft from s and e lines.

YOUNG COUNTY—Allday Oil Corp., Wichita Falls, Johnson 3, B 14, E. W. Sargent sur, 450 ft from w and 466 ft from s line. Wooten & Reed, Graham, Prideaux 1, B 28, MCSL sur, 1000 ft from w and 150 ft from s line. Perkins & Cullum, Wichita Falls, Rohus 3, A. Rohus sur, 252 ft e of No. 2; 4, 150 ft from s and e lines. Wichita Prod. Co., Wichita Falls, Wilson 3, 162 TE&L sur, 300 ft nw of No. 1. D. L. Wolf et al, Olney, Lowe 2, 59 TE&L sur, 600 ft e of No. 1. W. R. Stafford, Graham, Boone 1, BBB&C sur, 150 ft from s and w lines.

CALIFORNIA

DOMINGUEZ—Union Oil Co., Carson 4, 33-3-13; Callender 23, 33-3-13.

HUNTINGTON BEACH—Globe Lease and Royalty Co., No. 4, 27-5-11. George E. Cloud, No. 2, 10-6-11. World Pet. Corp., No. 10, 10-6-11.

KERN FRONT—R. B. Jackson and C. H. Chamberlain No. 1, 19-29-28.

KERN FRONT — Petroleum Securities Co., No. 14, 22-28-27. Standard Oil Co., No. 14, 27-28-27. The Kern River Oilfields Ltd., No. 5, 26-28-27.

LONG BEACH—J. H. Cochran No. 1, 29-4-12. Graham-Loftus Oil Co., Acme 1, 19-4-12; Acme 2, 9-4-12; No. 3, 19-4-12. Dabney-Johnston Oil Corp., No. 10, 24-4-13. Hancock Oil Co., Signal 7, 19-4-12. George F. Getty Inc., and J. Paul Getty, L. B. 23-A, 19-4-12. George F. Getty Inc., L. B. 27, 20-4-12. Painted Hills Oil Assn., No. 14, 19-4-12.

LOS ANGELES COUNTY — Easton and Smith et al, No. 3, 19-1-17.

MIDWAY—Standard Oil Co., No. 85, 29-31-24.

MT. POSO—General Pet. Corp., Glide 21-9, 21-27-28.

SESPE—Henry De Mond No. 1, 19-4-19.

TORRANCE—Chanslor-Canfield Midway Oil Co., Torrance 81, 15-4-14.

VENTURA—Associated Oil Co., McGonigle 3, 23-3-23.

COMPLETIONS

(Continued from page 68)

WEST TEXAS

Company, Well and Location	Initial Production Bbls.	Depth
CRANE COUNTY—		
Gulf Prod. Co., McElroy 47	195	2925
University-Lassiter 11	150	3080
Prairie O. & G. Co., University-Lassiter 6-A	75	2975
HOWARD COUNTY—		
Lockhart & Co., Roberts 1	1800	3019
J. R. McCaldin-Oeland et al, Roberts 1	¶1½	1900
PECOS COUNTY—		
Gulf Prod. Co., M. A. Smith 8	7200	1470
M. A. Smith 9	5760	1430
Humble O. & R. Co., Smith 4-B	2000	1722
Mid-Kansas-Transcontinental, Smith-Taylor 7	7700	1526
I. G. Yates 21-B	6600	1106
The California Co., Yates 13	21,000	1482
WINKLER COUNTY—		
Independent O. & G. Co., Grisham-Hunter 5	12,200	2955
Grisham-Hunter 8	5000	2904
Grisham-Hunter-Vardeman 2-B	15,000	2794
Republic Prod. Co., Grisham-Hunter 2-B	¶40-100	2980
Roxana Pet. Corp., Grisham-Hunter 2-A	16,000	2746
Ida Hendrick 2-B	1270	3053
Hendrick 5-C	1200	2935
Grisham-Hunter 2-D	4800	2763
Southern Crude & R. A. Westbrook, Hendrick 5-C-T-88	600	3044

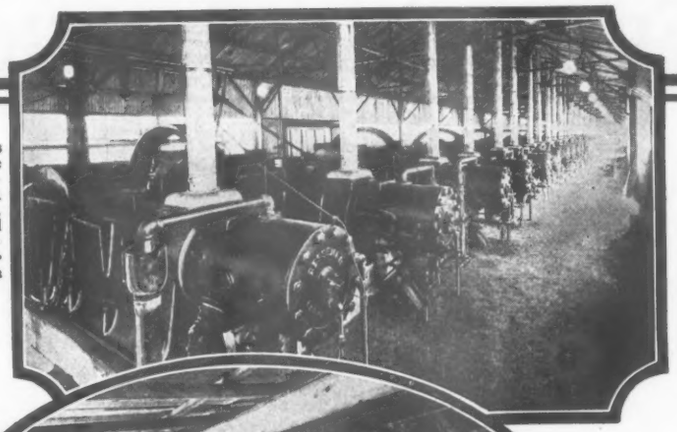
TEXAS GULF COAST

BIG CREEK—		
Gulf, T. W. Davis 24	300	3200
GOOSE CREEK—		
Gulf, State 2, San Jacinto Bay	22	3100
HULL—		
Mecom Oil Co., Mecom (Taylor) 4	*	4015
PIERCE JUNCTION—		
Martin et al, Settegast 1	1680	3350
SPINDLE TOP—		
Sun Co., Price 2	*	5375
McLean 16	500	5075
McLean 19	300	5175

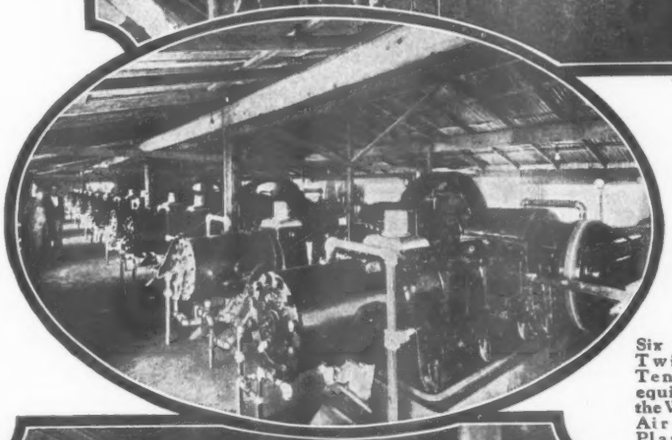
Test in Nebraska

Denver, Colo.—Ohio Oil Company has an extensive core-drilling campaign under way in Western Nebraska, in Webster and Franklin Counties. As soon as this work has been completed the company will decide whether or not to drill a series of oil tests in that region.

Casper, Wyo.—Foreman Oil Company of Detroit is asking for a renewal of its leases on the Rawhide structure and at Jay Em, in Goshen County. The Rawhide test is in section 24-26-62 and the hole has been standing at about one mile deep for more than a year. The Jay Em test is in section 6-28-62 and has been standing for an equal length of time, or longer, at 1200 feet. It is estimated that this company has spent in the neighborhood of $200,000 in these two tests.



In this Air-Gas Lift Plant of the Magnolia Petroleum Co. in the Earlsboro, Seminole field there are 14-165 H. P. Bessemer Twin Type Tens.



Six Bessemer Twin Type Tens are the equipment in the Wadsworth Air-Gas Lift Plant of the Mid-Continent Petroleum Corporation.

Eighteen 165 H. P. Bessemer Twin Type Tens in the Carter Oil Co's Stewart gasoline plant, Seminole field.

The four Bessemer Twin Type Tens in a plant of the Wilcox Oil & Gas Co., Seminole, Okla.

Running Time

WHEREVER Bessemer Compressors are found in service, there you will invariably find running records of 99% +: records which give striking proof of their Bessemer performability, whether in gasoline plants, air-gas lift plants or booster stations.

Once a Bessemer is put to work it stays on the job, delivering the utmost in compressor service year after year. It is for this reason that they represent the soundest compressor investment that you can make—judged by mechanical or compressor efficiency, maintenance expense or depreciation. Thousands of installations are constantly demonstrating that Bessemers can be relied upon to deliver this profitable running-time-plus, consistently.

THE BESSEMER GAS ENGINE COMPANY
62 York Street ∴ Grove City, Pa.

BESSEMER

BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Say you saw it in The OIL WEEKLY

WILDCATS FROM ALL SECTIONS

OKLAHOMA

T 28n, R 3w, Grant County—Sec 6, Otstot Dev. Co.'s Snyder 1, ne c, sd 4518 ft.

T 27n, A 21w, Harper County—Sec 24, A. F. Kopison Oil Co.'s Selman 1, ne c se, spd and sd.

T 27n, R 15w, Woods County—Sec 20, Sooner State Oil Co. & E. R. Black's Marcum 1, c sw, spd and sd.

T 27n, R 5w, Grant County—Sec 18, J. W. Bailey et al's Custard 1, c se, show oil and gas at 4628-34 ft, ts 4835 ft, td 4842, 800,000 gas, sd for cas.

T 27n, R 2w, Kay County—Sec 23, Boucher et al's Cooper 1, se c, swdging 12-in at 1435 ft. Sec 25, Marland Oil Co. & Boucher's Woods 1, ne c se, dr 1495 ft.

T 27n, R 1e, Kay County—Sec 8, Mathews et al's Buessing 1, nw c, cellar.

T 26n, R 4w, Grant County—Sec 34, Sooner State Oil Co.'s Royce 1, sw c nw, sd 550 ft.

T 2n, R 2w, Kay County—Sec 34, J. H. Markham, Jr., McGaha 1, sw c ne, ts 1750-65 ft, hfw, fsh cas.

T 26n, R 2e, Kay County—Sec 32, J. A. Vincent & National Union Oil Co.'s McNeal 1, nw c ne, sd 2795 ft.

T 25n, R 22w, Harper County—Sec 14, Hoffer Oil Co.'s Cooper 1, nw c se, sd 4182 ft.

T 25n, R 4w, Grant County—Cowden, sec 22, Vallner 2, ne s se ne sw, fsh bit 5640 ft.

T 25n, R 1w, Kay County—Sec 15, Tonkawa Dev. Co.'s McDaniels 1, se c, sd 4434 ft.

T 25n, R 1e, Kay County — Sec 10, Miller Brothers' Anderson 1, nw c se, hfw 3852-80 ft, dr 4090 ft.

T 21n, R 1w, Noble County—Sec 7, R. L. Corley's Williams 1, se c ne sw, sd 1920 ft.

Oklahoma Panhandle

T 6n, R 2e, Cimarron County—Sec 24, Jake G. Phillips' School Land 1, nw c, dr 4224 ft.

T 5n, R 2e, Cimarron County—Sec 22, Sinclair O&G Co.'s School Land 1, nw c, dr 4685 ft.

T 5n, R 6e, Cimarron County—Sec 4, Ramsey Brothers' School Land 1, se c, plugging off water at 4140 ft.

T 4n, R 1e, Cimarron County—Sec 34, Ramsey Pet. Co.'s School Land 1, c se dr 3388 ft.

T 4n, R 25e, Beaver County—Sec 22, O. H. Bonner et al's Maple 1, se ne, rig.

T 3n, R 15e, Cimarron County—Sec 17, Texas County Gas Co.'s Barbee 1, c ne ne, dr 990 ft.

T 2n, R 9e, Cimarron County—Sec 2, Fenton, Brookins & Flowers' Smaltz 1, sw c ne ne, spd and sd.

T 2n, R 18e, Texas County—Sec 23, Cannelly, Trammell & Danner's Graves 1, ne c sw sw, sd 315 ft.

T 1n, R 15e, Texas County—Sec 26, Hydraulic Oil Co.'s Hitch 1, ne c, sd 600 ft.

T 1n, R 19e, Texas County—Sec 5, Trammell, Connelly & Danner's Taney 1, se c nw, sd 280 ft.

T 1n, R 18e, Texas County—Sec 11, Three Way Oil Co.'s Price 1, se c nw, show gas 2560-2620 ft, water 2990-3006 ft, sd 3358 ft.

T 24n, R 17w, Woodward County — Sec 32, Otstot Dev. Co.'s Simmons 1, se c sd 1500 ft.

T 24n, R 6w, Garfield County—Sec 9, Pulse & Beamer's White 1, se c nw, sd water at 4720 ft.

T 24n, R 3w, Garfield County—Sec 14, Sagar Oil Co.'s Garsarch 1, se c, co 4256 ft. Sec 24, Marland Oil Co.'s Disney 1, c nw sw, dr 4825 ft.

T 22n, R 5w, Garfield County—Sec 3, Ashby & Barr's Swinery 1, nw c, sd 740 ft.

T 21n, R 25w, Ellis County—Sec 9, Oklahoma Northern Oil Co.'s 1, c se nw, sd 300 ft.

T 21n, R 19w, Woodward County — Sec 15, Burgoyne Brothers' 1, sw c se ne, dr 360 ft.

T 21n, R 21w, Woodward County — Sec 25, Sharon's Elmore 1, sw c, sd 2778 ft.

T 21n, R 4w, Garfield County—Sec 12, Beopple et al's Schriver 1, c e l sw sw ne, sd 1850 ft.

T 20n, R 4w, Garfield County—Sec 9, Marland Oil Co.'s Looman 1, ne c se, fsh cas 5735 ft. Sec 12, Marland Ol Co.'s Mller 1, sw c, sd 4586 ft.

T 18n, R 4w, Logan County—Sec 8, Champlin Ref. Co.'s Musgrove 1, se c sw, cmt 8-in 4754 ft.

T 18n, R 15w, Dewey County—Sec 9, Huckleby & McCoy's Perfect 1, ne c, sd 3274 ft.

T 18n, R 4w, Logan CountySec 6, Davis 7, Browning's Woods 1, ne c se, lcn. Sec 11, Welch, Acton & Brown's Hall 1, ne c se, sand 4748-85 ft, flowed 60 bbls through Bradenhead, dr 6034 ft.

T 18n, R 3w, Logan—Sec 33, Haley & Consolidated Drlg. Co.'s Quier 1, se c sw, dr by cas at 3690 ft.

T 17n, R 1e, Logan County—Sec 20, T. B. Slick's Signs 1, nw c sw, sd 5067 ft. Sec 28, T. B. Slick's Berry 1, sw c se, hfw 5305-30 ft, dr 5607 ft.

T 16n, R 7w, Kingfisher County—Sec 6, Pet. Eng. Core Drlg. Co.'s Campbell 1, c nw se, rig.

T 16n, R 6w, Kingisher—Sec 27, Crawford & McKenna's Sturgeon 1, ne c sw, ur 6-in td 3800 ft,

T 16n, R 5w, Kingfisher County—Sec 26, Gault Brown Oil Co.'s Johnson 1, c nw, hfw 4185-4205 ft, sd for 5-in at 4370 ft.

T 16n, R 1w, Logan County—Sec 28, Blackford O&G Co.'s Lair 1, c s l n½ se, sd 1675, litigation.

T 15n, R 1w, Logan County—Sec 12, Bu-Vi-Bar's Kirkpatrick 1, c sw, sd for fuel 4505 ft.

T 14n, R 6w, Canadian County—Sec 9, A. D. Spears' Piatt 1, se c ne, sd 3223 ft.

T 13n, R 3w, Oklahoma County—Sec 18, Slick & Bailey's Lufkin 1, c ne se, r. u. s. t. 3750 ft.

T 12n, R 3w, Oklahoma County—Sec 15, Cromwell et al's Thompson 1, sw c ne ne, cmt 6-in, run liner 6820 ft.

T 11n, R 7w, Canadian County—Sec 9, Ramsey Brothers' Newman 1, c s l ne, dr 4100 ft.

T 10n, R 6w, Canadian County—Sec 1, J. M. V. Bailey's Robinson 1, c ne nw, spd and sd.

T 27n, R 12e, Osage County—Sec 6, Wa-Sha-She Oil Co.'s 1, c n l s½ ne, dr 1900 ft.

T 26n, R 8e, Osage County—Sec 13, Stephenson, Henry & Rock's 1, sw c nw sw, rig.

T 25n, R 6e, Osage County — Sec 4, Kay County Gas Co.'s 1, se c sw, sand 3253-3320 ft, td, show oil and two bbls water per hr.

T 25n, R 7e, Osage County—Sec 8, I. T. I. O. Co.'s 1, se c ne, sd 2878 ft.

T 23n, R 7e, Osage County — Sec 9, Kay County Gas Co.'s 3, sw c se se, ur 5-in 2807 ft.

T 23n, R 10e, Osage County—Sec 7, Sheeders Oil & Gas Co.'s 1, c ne, fsh tools 2340 ft.

T 19n, R 1e, Payne County—Sec 33, Gardner Pet. Co.'s et al's Ham 1, c sw ne, r. u. s. t. 4168 ft.

T 18n, R 3e, Payne County—Sec 32, Garber, Pulse & Gloyd's Widows 1, ne c se nw, sd 1200 ft.

T 17n, R 3e, Lincoln County—Sec 20, Willis O&G Co.'s Gunn 1, nw c se, ts 4636-77 ft, water, sd.

T. 17n, R 5e, Lincoln County—Sec. 27, Flynn & Morgan's Smith 1, sec ne nw, dr 1370 ft.

T. 14n, R 7e, Creek County—Sec. 11, Lima O. & G. Co.'s Grayson 1, nwc ne ne, ur 6-inch 34-31 ft. Sec. 16, Bu-Vi-Bar's Nero 1, c se ne, cemented 5-inch, td 1557 ft, sd.

T 13n, R 4e, Lincoln County—Sec. 16, Bu-Vi-Bar's School Land 1, c ne se, sd 4500 ft.

T 17n, R 13e, Tulsa County—Eec. 1, E. A. Hawley's Taylor 1, cesne, spudded and sd.

T 15n, R 9e, Creek County—Sec. 33, C. G. Tibbens et al's J. Marshall 1, swc ce cw, machine.

T 14n, R 9e, Creek County—Sec. 1, L. C. Wheeler & King's Morton 1, sec nw, lcn.

T 14n, R 11e, Okmulgee County—Sec. 7, Amerada Pet. Corp. et al's Farmer 1, swc se, Wilcox 3059-3076, hfw, dry and abn.

T 13n, R 9e, Okfuskee County—Sec. 21, Barnsdall Oil Corp.'s Self 1, swc se ne, Wilcox 3898-3905 hfw sd.

T 12n, R 10e, Okfuskee County—Sec, 8, Blakely et al's Yarhola 1, swc se nw, sd 3157 ft.

T 11n, R 10e, Okfuskee County—Sec. 4, Moose & Daniels Stidham 1, swc nw, sd 622 ft.

T 15n, R 18e, Muskogee County—Sec. 12, C. F. Finefield's GG. Jobe 1, nwc se, 1252 ft, c. o.

T 13n, R 17e, Muskogee County—Sec. 34, Elk Drlg. Co.'s McKee 1, csl se se se, sd 160 ft.

T 13n, R 18e, Muskogee County—Sec. 33, L. T. Haynie's Linder 1, c se, fsh 1660 ft.

T 11n, R 13e, Okmulgee County—Sec. 27, G. N. Buzzard et al's Thompson 1, nwc ne ne, hfw in Wilcox 3720-3800 ft, s. o.

T 9n, R 16e, Pittsburg County—Sec. 32, Pattison et al's McDuff 1, swc nw se, fsh bailer 4570 ft.

T 9n, R 18e, Haskell County—Sec. 10, Marion Oil Co.'s Sanders 1, nwc ne sw, sd 2250 ft.

T 7n, R 17e, Pittsburgh County—Sec. 21, Quinton Spelter Co.'s Yoho 1, nec, dr 500 ft.

T 5n, R 18e, Latimer County—Sec. 15, Limestone O. & G. Co.'s Murray 1, swc, drlg. 1600 ft.

T 11n, R 2e, Pottawatomie County—Sec. 32, Wilcox O.& G. Co.'s Pickard 1, sec sw, drlg. D. & A. at 4500 ft.

T 10n, R 2w, Cleveland County—Sec. 22, Cromwell & Franklin's Donavan 1, c sw, sd 4706 ft.

T 10n, R 3e, Pottawatomie County—Sec. 12, Sikes, Kilgore & Shaffer Ives 1, sec se, dr 4706 ft.

T 10n, R 4e, Pottawatomie County—Sec. 28, Central National Oil Co.'s Toney 1, swc, cementing 8-inch casing 3980 ft.

T 10n, R 5e, Pottawatomie County—Sec 16, Clark, Edwards et al's School Land 1, nec sw, d and a at 4792 ft.

T 8n, R 2e, Pottawatomie County—Sec. 24, Superior Oil Corp., Jones 1, sw c nw ne, ur 6-inch 4124 ft.

T 8n, R 4e, Pottawatomie County—Sec. 1, Amerada Pet. Corp.'s Gravel 1, swc se ne, dr 3185 ft.

T 7n, R 1w, Cleveland County—Sec 15, Sooner Oil Co.'s Vandeveer 1, nec nw sw, 2994 ft, cemt. 8-in c o.

T 7n, R 6e, Seminole County—Sec 7, Simon & Beam's Palmer 1, nec nw ne, rig.

T 7n, R 7e, Seminole County—Sec 32, I. T. I. O. Co.'s Marshall 1, nwc sw, fsh 4759 ft.

T 7n, R 8e, Hughes County—Sec 21, Jarvis & Holmes' Street 1, nwc se nw, td 4362 ft hfw, p b to 3090-3126 ft, shot 150 qt, swab 115 bbl daily.

T 6n, R 2e, Pottawatomie County—Sec 10, Davis, Detrick e tal's McGahey 1, sec nw, sd 4988 ft.

T 6n, R 6e, Seminole County—Sec 1, T. B. Slick's Moore 1, swc ne sw, ts 2750-53 ft, 1000 ft fluid in hole, ur 6-in.

T 6n, R 7e, Seminole County—Sec 5, Magnolia's Vierson 1, sec nw, dr 3385 ft. Sec. 36, Gardner et al's Harris 1, nwc se, set 6-in at 2798 ft.

T 6n, R 8e, Seminole County—Sec 18, Carter Oil Co.'s Phillips 1, nwc ne nw, owd, fsh 3936 ft, makes ½ bailer oil per hr.

T 5n, R 5e, Seminole County—Sec 13, Shaffer O. & R. Co.'s Isaacs 1, c ne sw, set 6-in at 2545 ft.

T 5n, R 6e, Seminole County—Sec 13, T. B. Slick's Barrett 1, nec se nw, set 6-in at 3655 feet.

T 5n, R 9e, Hughes County—Sec 17, E. W. Whitney's Ruddlestone 1, sec sw, dr 350 ft. Sec 20, Noble O. & G. Co.'s Wickett 1, sec, dr 840 ft. Sec 31, Winkler & McQueen's Tyger 1, c sw se, d and a at 2955 ft.

T 10n, R 12w, Caddo County—Sec 28, Magnolia Pet. Co.'s Selby 1, swc, dr 1760 ft.

T 9n, R 22w, Beckham County—Sec 32, O. &

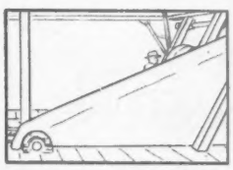
NOTE—Following is the explanation of abbreviations, signs, etc., used in completion and wildcat reports: *—dry hole, abandoned well; ‡—salt water; †—junked and abandoned; ¶—million feet of gas; abn—abandoned; bbls—barrels; b.s.—basic sediment; cas—casing; co—cleaning out; dk—derrick; dr—drilling; fsh—fishing—ft—feet; in—inches; lcn—location—m—milling; n, s, e, w—north, south, east, west; r—reaming; sd—shut down; sdtr—sidetracking; sp—spudding; sr—straight reaming; std—standardizing; sw—salt water—td—total depth; ur—underreaming; wo—workover; wosr—waiting on standard rig.

Another outstanding Emsco safety feature

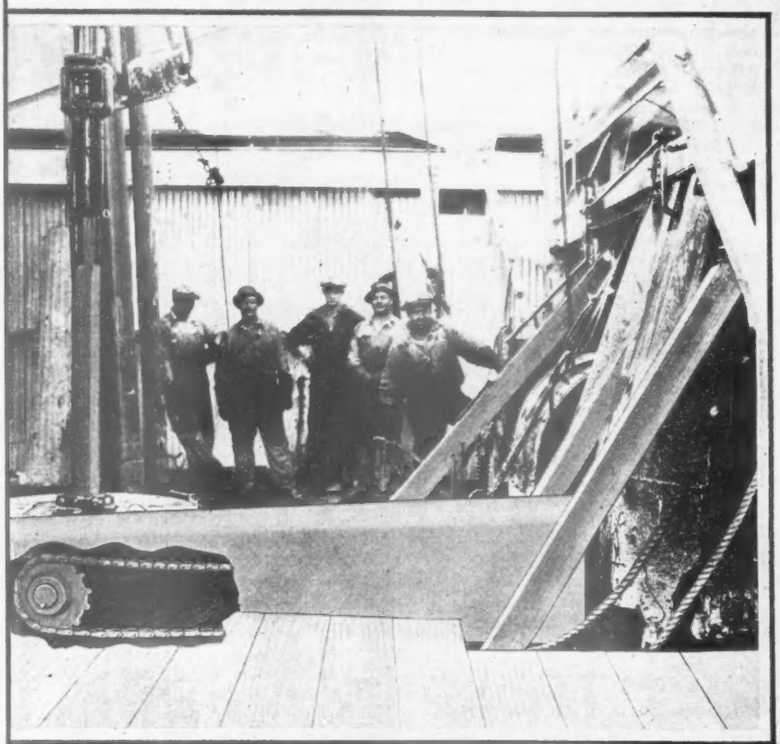
STOP

the dangerous practices made possible and encouraged by the old type of high-chain drive to the rotary. Make it impossible for the cathead operator

or the other men on the derrick floor to pass between the two lines of chain. Do away with the old-fashioned guard necessitated by the high chain drive



which hides the rest of the floor from the driller at the brake. Standardize on the Emsco low chain drive for safety!



The EMSCO *Low-Chain Drive*

THE common high type of chain drive for the rotary table has always been a potential danger spot. While safety laws require that the drive be covered, this precaution is often neglected in the interest of convenience—and this kind of neglect often leads to serious accidents. It is not uncommon to see the cathead operator dodge between two lines of chain moving under a heavy strain.

When a high chain-guard is used it hampers the movements of the men on the derrick floor; the most efficient guard, which is made of sheet steel, prevents the driller from observing other operations from his position at the brake.

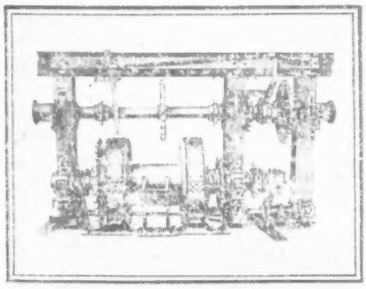
Now comes the Emsco low chain drive. In this type of drive the top strand of chain runs close to the floor from a countershaft mounted low on the draw-works post, while the lower strand runs below or on the floor level. A sheet steel guard but 22 inches high covers the chain completely, protecting everyone from flying pieces should the chain break under its heavy load.

All the possibilities for accidents are eliminated. Complete protection is afforded. A man can easily step over the guard with safety. It is impossible to pass between the lines of chain. A full unobstructed view is afforded the driller to every part of the derrick.

The shock of drilling is transmitted to the countershaft, which is mounted close to the base anchor point of the draw-works posts. Vibration is thus reduced and the rigidity of the draw-works materially increased.

EMSCO
A Complete Line of Better Oil Well Equipment

Send for the EMSCO catalog, as well as detailed information on the Low Chain Drive



Emsco Steel Equipped Wells

EMSCO
Derrick & Equipment Company
Los Angeles California
Houston Texas
New York Office: 150 Broadway
Factory Branch at Tulsa

Are Safe

H. Pet. Co.'s Barnes 1, nwc ne, owd, sd 3000 ft, 300 ft oil in hole.

T 9n R 5w Grady County—Sec 13 Remington's Fulton 1, swc ne, sd 720 ft.

T 6n, R 10w, Caddo County—Sec 22, English Drlg. Co.'s Jacobs 1, nwc se, sd 3540 ft.

T 6n, R 12w, Caddo County—Sec 29, W. J. Hartley's Gilbreath 1, sec nw se, owd, sd 3394 ft.

T 5n, R 7w, Grady County—Sec 7, Nicholos & Page's Drake 1, cel se, sd 1900 ft.

T 3n, R 10w, Comanche County—Sec 24, Jolly & Ogg's Sparlin 1, sec ne, dr 1250 ft.

T 2s, R 16w, Kiowa County—Sec 6, Landfair 1, sec sw se, dr 2333 ft.

T 5n, R 4e, Pontotoc County—Sec 12, Gillespie et al's Fleming 1, swc se, sand 2545-2565 ft, swab 25 bbl and sd.

T 4n, R 1e, Garvin County—Sec 15, Dixie Oil Co.'s Perkins 1, sec nw, dr 4592 ft.

T 4n, R 3e, Garvin County—Sec 10, Garland Oil Co.'s Strickland 1, swc nw sw, td, ream hole 2422 ft.

T 4n, R 4e, Pontotoc County—Sec 10, Marland Oil Co.'s Lawrence 1, c sw se, dr 1365 ft.

T 4n, R 6e, Pontotoc County—Sec 13, American O. & R. Co.'s Wright 1, nwc ne ne, sd 1970 ft. Sec 35, Bowles et al's Rayborn 1, swc se, sd 1320 ft.

T 4n, R 7e, Pontotoc County—Sec 8, J. C. Crosby & Hicks' Nowbaby 1, sec ne sw, dr 50 ft.

T 3n, R 1e, Garvin County—Sec 12, Magnolia's Vaughn 1, nwc sw nw, td 4662 ft.

T 1n, R 2e, Murray County—Sec 17, Revels & McGee's M. Wolfe 1, swc, dr 335 ft.

T 1n, R 8e, Coal County—Sec 35, W. E. McGraw et al's Patton 1, swc se ne, sd 935 ft.

T 4s, R 2w, Carter County—Sec 13, Roxana's Sarasota 1, sec, hfw 2260-61 ft, dr 2785 ft.

T 5s, R 4e, Marshall County—Sec 11, Bilbo's Chapman 1, nec nw ne, sd 380 ft.

KANSAS

BARBER COUNTY—T 30s, R 14w, Sec 27, Rowland et al's Pickens 1, owd, nec nw ne, sd 3196 ft. T 31s, R 12w, Sec 17, Merriman et al's Winter 1, c n½, fsh 3445 ft. T 33s, R 12w, Sec 19, Schaffer et al's Boggs 1, c sw, dr 4752 ft. T 33s, R 13w, Sec 2, Schaffer et al's Carter 1, c se se, fsh 3980 ft.

BARTON COUNTY—T 20s, R 13w, Sec 12, Everette & Wiley's Ward 1, nwc sw, sd 3940 ft.

BUTLER COUNTY—T 25s, R 4e, Sec 18, Wichita Drlg. Co.'s Joseph 1, nec se nw, sd 2230 ft. T 27s, R 3e, Sec 24, La Rob Oil Co.'s Baysinger 1, nec sw, rig. T 27s, R 5e, Sec 26, Cress, Frank et al's Bryson 1, nec, dr 525 ft. T 26, Cress, Frank et al's Bryson 1, nec, dr 525 ft. T 28s, R 6e, Sec 21, Burford & Brimm's Ferris 1, sec ne sw, lcn. T 29s, R 4e, Sec 21, E. Wilcox et al's Holcomb 1, nec se nw, sd 1456 ft.

CHASE COUNTY—T 21s, R 7e, sec 9, Greener, Fowler et al's Carson 1, nec, dr 2025 ft.

CHAUTAUQUA COUNTY—T 32s, R 8e, Sec 15, Roth & Faurot's Hamil 1, nwc sw nw, lcn. T 32s, R 9e, Sec 33, Manhattan Oil Co.'s Payne 1, sec nw nw, dr 800 ft.

CLARK COUNTY—T 31s, R 23w, Sec 16, Walker & Walner's Mitchell 1, swc ne, sd 420 ft.

CLOUD COUNTY—T 6s, R 4w, Sec 6, Concordia Oil Co.'s Murdock 1, sec, sd 3590 ft.

COFFEY COUNTY—T 22s, R 15e, Sec 11, Clark et al's Douglas 1, nwc se ne, sd 1115 ft.

COWLEY COUNTY—T 30s, R 3e, sec 3, Vickers Pet. Co.'s Daniels 1, nwc ne, sd 1650 ft; sec 32, Derby Oil Co.'s Seaman 1, nec se ne, d and a at 2204 ft. T 30s, R 6e, sec 20, Allison & Fitzwilliams' Manley 1, nec nw se, dr 250 ft. T 31s, R 4e, sec 14, Trees Oil Co.'s King 1, swc se ne, dr 1638 ft. T 31s, R 5e, sec 4, Tatlock et al's Elliott 1, owd, nwc se, sd 3422 ft. T 32s, R 6e, sec 12, Trees Oil Co.'s Estus 1, sec nw, dr 1407 ft. T 33s, R 4e, sec 4, White Oil Co.'s White 1, swc ne, rig. T 34s, R 3e, sec 10, Shawver et al's Amena 1, nwc, sd 1154 ft.

DICKINSON COUNTY—T 16s, R 4e, sec 2, Skow & Ritchey's Will 1, c nw nw, lcn; sec 35, Harwood & Winters' Uteck 1, swc se nw, sd 2590 ft.

ELLIS COUNTY—T 13s, R 16w, sec 26, Tatlock et al's Leiker 1, nwc ne ne, dr 3286 ft.

FRANKLIN COUNTY—T 16s, R 18e, Sec 17, Smith, Thrice & Fisher's Owens 1, cel e½ e½, sd 1450 ft. T 17s, R 17e, sec 25, Omar O. & G. Co.'s Bush 1, sec sw, lcn.

GREENWOOD COUNTY—T 24s, R 13e, sec 4, Carnes & Bly's Smith 1, nec se, dr 2250 ft. T 26s, R 9e, sec 6, Kiskadden et al's Wilkerson 1, nec se sw, lcn. T 26s, R 11e, sec 22, Devine et al's Bradford 1, swc ne, sd 600 ft. T 26s, R 12e, sec 20, Smith & Rockhill's McNair 1, nwc se, show oil 1160-62 ft. T 27s, R 13e, sec 28, O. W. Culp et al's Smith 1, c ne se, d and a at 1575 ft. T 28s, R 12e, sec 1, Swanson et al's Hayes 1, sec nw ne, sd 1600 ft.

GRAHAM COUNTY—T 8s, R 25w, sec 27, Gulf Coast Drlg. Co.'s St. John 1, owd, swc nw se, sd 3450 ft.

HARPER COUNTY—T 34s, R 6w, sec 24, Amerada Pet. Corp.'s Mendenville 1, c se se, dr 4375 ft.

JEFFERSON COUNTY—T 9s, R 19e, sec 13, Northern Counties Oil Co.'s Edwards 1, sec nw nw, sd 2405 ft. T 10s, R 17e, sec 19, Wichita Oil Co.'s Simpson 1, nwc sw sw, lcn.

LABETTE COUNTY—T 33s, R 17e, sec 1, Cowell et al's Hornbeck 1, swc ne sw, sd 1375 feet.

LYON COUNTY—T 21s, R 10e, sec 14, Hawks et al's Schroeder 1, sec sw, fsh 1720 ft.

MARSHALL COUNTY—T 4s, R 7e, sec 4, Marshall Oil Synd.'s Finn 1, nwc ne ne, 2606 ft, sd.

McPHERSON COUNTY—T 17s, R 3w, sec 1, Lamar et al's Lamar 1, sec, d and a at 3600 ft. T 20s, R 3w, sec 20, Polar Oil Co.'s Dary 1, c nw, spd and sd.

MARION COUNTY—T 17s, R 4e, sec 31, Givins et al's Ucker 1, swc ne, d and a at 2703 ft. T 18s, R 4e, sec 20, Skow et al's Melcher 1, c ne se, show gas 2470 ft. T 18s, R 5e, sec 31, Anderson et al's Benthe 1, sec sw sw, dr 1920 ft. T 19s, R 4e, sec 17, Frank et al's Reed 1, nwc, sd 2406 ft, td 2841 ft, plugged back. T 21s, R 1e, sec 1, Sun Ray Oil Co. et al's Lehrman E1, swc ne se, sd 2710 ft.

MEAD COUNTY—T 33s, R 28w, sec 9, Blackwell O. & G. Co.'s Lilly 1, c se, sd 3310 ft.

MORRIS COUNTY—T 14s, R 17e, sec 32, Klein et al's Barber 1, sec nw, rig. T 16s, R 9e, sec 22, Lambert et al's Southard 1, swc se, lcn. T 17s, R 5e, sec 30, Graham et al's Nelson 1, nec se, dr 1270 ft.

NEMEHA COUNTY—T 3s, R 11e, sec 19, Nemeha O. & G. Co.'s Myers 1, nwc, sd 3050 ft.

OSBORNE COUNTY—T 9s, R 15w, sec 30, Davis et al's Prather 1, sec sw, sd 2360 ft.

OSAGE COUNTY—T 15s, R 15e, sec 3, Barber et al's Lease 1, c se se, sd 260 ft. T 15s, R 16e, sec 27, West et al's Baley 1, swc ne, sd 800 ft. T 17s, R 17e, sec 8, Mull Vit Dev. Co.'s Neil 1, nwc sw ne, dr 2931 ft.

POTTAWATOMIE COUNTY—T 10s, R 12e, sec 11, Crawford et al's St. Mary 1, swc, sd 2290 ft.

RENO COUNTY—T 22s, R 4w, sec 6, Danciger et al's Williams 1, nec sw se, rig.

RILEY COUNTY—T 10s, R 7e, sec 20, Youker et al's Theirer 1, nwc, sd 3028 ft.

ROOKS COUNTY—T 8s, R 16w, sec 14, Krueger et al's Poor 1, nec, spd and sd. T 10s, R 16w, sec 28, Streeter & Stearns' Mattison 1, c nw, sd 3531 ft.

RUSH COUNTY—T 17s, R 17w, sec 27, Valerious Oil & Gas Co.'s Schreveman 1, c nw, spd and sd.

SHAWNEE COUNTY—T 12s, R 14e, sec 21, McBride & Goens' Shirley 1, nec sw, sd 2306 ft.

STAFFORD COUNTY—T 21s, R 11w, sec 23, Harper et al's Siffers 1, owd, nwc sw ne, ts 3385-3400 ft, show oil, dr 3573 ft.

SHERMAN COUNTY—T 7s, R 40w, sec 20, Hannson et al's Murry 1, owd, nec sw nw, sd 2650 ft.

SUMNER COUNTY—T 33s, R 3w, sec 22, Otstot et al's Bartlow 1, sec, sd 1860 ft. T 34s, R 2w, sec 23, Gypsy Oil Co.'s Douglas 1, nec se nw, ts 4493-99 ft, 16 bbl per hr. T 34s, R 3w, sec 4, Jarvis et al's Wernecke 1, sec sw, sd 4205 ft. T 34s, R 4w, sec 11, Jarvis et al's Wycoff 1, swc nw, sd 4216 ft. T 35s, R 1e, sec 9, Otstot et al's Volker 1, nwc ne, rig.

SOUTHERN CALIFORNIA

CLAREMONT—Claremont O. & G. Co.'s 1, sd 1130 ft.

COSTA MESA—Mesa Pet. Co.'s 1, dr hard sand 1984 ft.

CYPRESS—Ohio Oil Co.'s 1, 9-4-11, sd.

DAVIDSON CITY—Calif. Well Drlg. Co.'s 1, will deepen from 7060 ft.

DOMINGUEZ—Dominguez Extension Oil Co.'s 1, gas showing 5510 ft.

EL SEGUNDO—Southern Calif. Drlg. Co.'s Matteson 1, will deepen from 4865 ft.

GARDENA—Circle O. & G. Co.'s Pomeroy 1, sd 4130 ft, may abn.

FULLERTON—Shell Co.'s Stern 1, dr hard sand 3908 ft.

HAWTHORNE—San Clemente Oil Co.'s Peck 1, 6¼-in cemt 5495 ft, td 5765 ft. Scott & Currier's 1, rig. Shell's O'Donnell 1, co 1825 ft, td 5300 ft.

HUNTINGTON BEACH—Calnan Pet. Co.'s S. & W. 1, co 4440 ft, td 5107 ft. Duell Petroleum Corp.'s Schuh 1, rig.

INGLEWOOD—Hurst Oil Corp.'s Simon 1, sd 3740 ft.

LANCASTER—Otos Andrews' 1, dr hard sand 1208 ft. J. B. Harding's 1, sd 975 ft.

LYNWOOD—Security Pet. Corp.'s 1, dr brown shale 3768 ft.

MAYWOOD—Magnolia Pet. Synd.'s Tweedy 1, sd 2700 ft.

MONTEREY PARK—Monterey Park Pet. Corp.'s Browning 1, sd 3910 ft.

MONTEBELLO—Rotary Air Drill Co.'s Germain 1, sd 1400 ft.

NEWHALL—W. W. Stabler's Castaic 1, sd 3410 ft.

ORANGE—Charles A. Son's Pinkerton 1, sd 3620 ft.

POTRERO—Associated's Cypress 1, 4¼-in csg cemt 5283 ft, td 5408 ft; Cypress 2, dr brown shale 2622 ft. Carpernet & Smith's 1, producing 1,500,000 cu ft gas 5400 ft. Pan American Pet.'s Connolly 1, dr hard brown shale 5250 ft.

SAN FERNANDO—Shell's Mission 1, fsh 4955 ft.

SAN JOSE HILLS—Bardeen Oil Co.'s Didier 3, sd 2255 ft. D. & B. Oil Co.'s Amar 1, sd 4380 ft. Fuller & Gray's Sanchez 1, rig.

SEAL BEACH—George F. Getty's 1, dr 684 ft.

SUNSET BEACH—Olympic Ref. Co.'s Community 1, dr sandy shale 4150 ft.

SAN JUAN CAPISTRANO—O. K. Carr's Forster 2, sd 4185 ft.

TELEGRAPH CANYON—Quadra Pet. Corp.'s M. J. M. 1, sd 4210 ft.

YORBA—Standard's Y. L. W. 1, dr gray sand 5283 ft.

WATTS—Southwest Pet. Corp.'s Ramsaur 1, sd 4300 ft.

WATSON—White-Behr Oil Co.'s Watson 1, 10-in csg cemt 4415 ft, td 4610 ft.

MISCELLANEOUS

RIVERSIDE COUNTY—L. R. Clark's 1, dr 950 ft. Hemet Petroleum's 1, dr hard sand 2255 ft. Spindletop Oil Synd.'s 1, sd 3175 ft. Trabuco Oil Co.'s 1, dr hard sand 3344 ft.

SAN BERNARDINO COUNTY—Colton Terrace Oil Co.'s Colton 1, sd 1680 ft. H. & P. Oil Co.'s 1, will abn 2140 ft. Hesperia O. & G. Co.'s 1A, plugging back from 3310 ft. J. W. McPhearson's Clide 1, dr hard sand 386 ft. Western Pacific Oil Co.'s 3, sd 3005 ft.

SAN DIEGO COUNTY—Davenport O. & G. Co.'s 1, dr hard sand 320 ft. Ganymede & Dunn's 1, fsh for dr pipe 3210 ft. Mills Oil Co.'s Pueblo 1, dr lime 2094 ft. S. S. Turner's Baler 1, dr hard sand 290 ft.

NORTHERN CALIFORNIA

SAN LUIS OBISPO COUNTY—

Richfield Oil Co.'s Wreden 1, 10-29-17 3130

KERN COUNTY

ADOBE CANYON—Berry Oil Co.'s 1, 25-27-28, new lcn.

BAKERSFIELD—Pacific Eastern Prod. Co.'s KSL 1, plugging back to 5225 ft; KCL 2, dr 3660 ft. Jackson & Chamberlain's 1, 19-29-28, new lcn.

BELRIDGE—Zurich Oil Co.'s 1, 18-28-22, dr shale 2591 ft.

BUTTONWILLOW—Milham Explo. Co.'s Kern 3, 8-28-23, setting 10-in csg 2565 ft; Salisbury 1, will deepen from 4150 ft. McAdams et al's 1, 26-29-23, set 8¼-in csg 4685 ft. Southern Calif. Gas Co.'s 1, 4-28-23, dr shale 2786 ft.

COMANCHE POINT—Kern 29 Oil Co.'s 1,

Perfect Flexibility!

Tested and Guaranteed up to 750 lbs. per sq. inch

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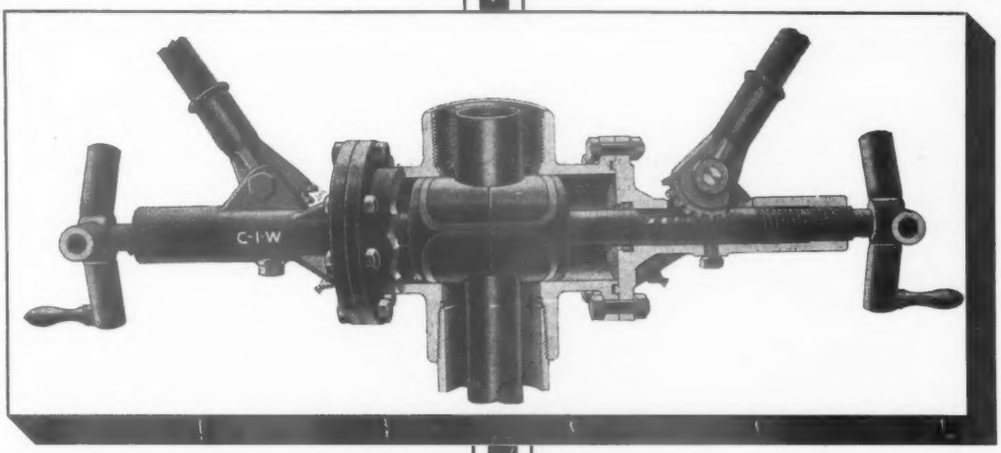
Flowing Wells—
Pumping Wells—
Gas and Air Lift Wells—



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IT IS NO LONGER NECESSARY to change the manifold equipment of a well when you change the method of recovery. This one tool eliminates many fittings ordinarily used in the various hook-ups, and gives the simplest manifold assembly. Rams which fit perfectly around the tubing are operated quickly by lever jacks to grip securely in an emergency—or by lock-screws to thoroughly pack tubing off from casing. Port holes in body make oil delivery possible through casing or tubing.

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—Run tubing in the well, under pressure—with SAFETY!

—Have POSITIVE CONTROL of the well under ALL conditions!

Cameron Iron Works

Manufacturers of
Oil Well Supplies and Specialties

HOUSTON, TEXAS.

29-31-30, sd 2440 ft. W. W. Stabler's 1, 23-32-29, dr 578 ft.

CORRAL CANYON—Poso Prod. Co.'s 1, 32-26-28, dr 675 ft.

DELANO—North American Consolidated Oil Co.'s 1, 5-25-26, dr brown shale 3996 ft.

DEVILS DEN—Marathon Oil Co.'s 1, 13-25-18, sd 4390 ft. Midway Northern Oil Co.'s 1, 25-25-18, sd 2460 ft. Robins Oil Co.'s 1, 25-25-18, sd 2280 ft. R. H. Sayers' 1, 25-25-18, sd 1475 ft.

EDISON—General Petroleum's Kerwin 1, co to drill deeper, td 4006 ft. Midway Northern Oil Co.'s Brown 1, dr 3175 ft. Superior Oil Co.'s 1, 24-29-29, dr 1366 ft. ....

FRUITVALE—Pacific Eastern Prod. Co.'s 1, pumping 175 bbl.

GREENFIELD—J. E. O'Donnell's 1, 31-30-28, rig.

GOULD HILLS—Bomke & Ball's 1, 12-29-20, dr 1450 ft. California Kentucky Oil Co.'s 1, 8-29-21, dr 1621 ft. Exeter Oil Co.'s 1, 1-29-20, dr 760 ft. Jackson & Chamberlain's 1, 36-29-20, sd 580 ft. Herbert Moore's 1, 11-29-20, dr 616 ft; 2, 11-29-20, sp Myrtle E Oil Co.'s 1, 8-29-21, pumping 12 bbl. H. B. Porter's 1, 36-28-20, sd 1510 ft. Rhoads Oil Co.'s 1, 20-29-21, sd 1485 ft.

McKITTRICK—McKittrick Hills Oil Co.'s 2, 18-30-32, pumping 30 bbl.

MON BLUFF—Shell's Glide 1, 3-28-28, dr gray sand 4140 ft.

MT. POSO—Modoc Oil Co.'s Hyde 1, rig. General Petroleum's 7, 21-27-28, lcn; 9, 21-27-28, dr 80 ft.

SEMITROPIC—Semitropic Oil Co.'s Kerwin 1, 21-26-22, sd 1560 ft.

SHALE HILLS—Huntington & Hawthorne's 1, 35-26-18, sd 600 ft. Nelson & Mountford's 1, 18-27-14, sd 2090 ft. Oildale Oil Co.'s 1, 13-27-18, sd 560 ft.

SUNSET—Fresno Sunmaid Oil Co.'s 1, 16-11-24, sd 4200 ft.

TEMBLOR HILLS—Jackson & Chamberlain's 1, 36-29-20, dr 537 ft. Salegna Investment Co.'s 1, 36-29-20, sd 600 ft.

TEHACHAPI-MOJAVE—C. R. Asmussen's 1, 21-11-11, sd 1510 ft. Crusaders Oil Co.'s 1, 21-10-10, water trouble 2370 ft. John B. Harding's 1, 5-10-10, sd 1050 ft.

WASCO—Main Oil Co.'s 2, 28-27-24, pb to 4320 ft for test.

SANTA BARBARA COUNTY

GOLETA—Barnsdall Oil Co.'s Edwards 2, 3,000,000 cu. ft. gas 2455 ft. California-American Holding Co.'s PB 1, sd 1500 ft. J. J. Rekar's Pa Patera 1, 8-4-29, sd 2185 ft.

SANTA BARBARA—Twin State Oil Co.'s 1, 24-27-27, 8⅝-in csg cemt 2395 ft. Channell Oil & Dev. Co.'s 1, 22-4-26, water trouble 6025 ft.

SUMMERLAND — Summerland Oil Co.'s Becker 1, co 3000 ft, td 3045 ft.

VENTURA COUNTY

BARDSDALE—Calif. Western Oil Co.'s Elkins 1, rig.

FILLMORE—Henry Demound's 1, 19-4-19, lcn. Keck Investment Co.'s 1, 33-4-20, oil showings 4050 ft. Sespe Oil Co.'s 2, 33-4-20, sd 4005 ft.

HOPPER CANYON—Ruth J. Bishop's 2, 35-5-19, sd 200 ft.

OJAI — J. W. Hackworth's 1, 11-4-23, dr 1060 ft.

MOORPARK—E. A. Parkford's Lloyd 1, sd 4005 ft.

OXNARD—Shell's McGrath 1, dr 1500 ft.

PIRU—Bolsa Chica Oil Co.'s 1, 5-4-18, rig. Leonard Oil Co.'s 1, 4-4-18, testing 3945 ft. Petroleum Securities Co.'s Diablo 1, 26-5-10, sd 4200 ft. Petroleum Securities' 1, 17-4-18, sd 610 ft.

RINCON—Montecito Oil Producers' Cota 1, 13-4-25, dr 3610 ft. Scott Petroleum's 1, dr 2868 ft.

RED MOUNTAIN—Miley Explo. Co.'s 2A, 7-3-23, co 630 ft, td 755 ft.

SANTA PAULA—W. W. Bryant's Anlauf 2, 21-4-21, dr 281 ft.

SATICOY—Standard's Saticoy 2, new lcn.

SIMI—Emma F. Exline's Seaton 1, 33-3-21, rig. Shells' Berylwood 1, co 6160 ft, td 6420 ft; Strathern 1, 6-2-18, dr 3610 ft.

SOUTH MOUNTAIN—Ring Pet.'s Converse 1, sd 3980 ft.

VENTURA—Star Pet. Corp.'s Canet 1A, 13-3-23, dr hard sand 5371 ft.

MISCELLANEOUS

COLOUSA COUNTY—Continental's 2, 31-18-4, fsh for dr pipe 4390 ft. Calivada-Superior's 1, pumping 3 bbl 720 ft. Numa Oil Co.'s 1, 19-15-5, dr 371 ft.

FRESNO COUNTY — Fresno - Madera Oil Co.'s 1, 18-12-21, sd 3940 ft. Fresno-United Oil Co.'s 1, 23-15-18, sd 3960 ft. Superior's 1, 18-21-17, rig.

KINGS COUNTY—Associated's 1, 12-23-18, sd 2045 ft. General Petroleum's 1, 22-26-18, gas showings 6720 ft. Milham Exploration's 1, 2-22-17, dr 6690 ft. Monocline Dev. Co.'s 1, 7-21-21, sd 4310 ft. Hugh McPhail's 1, 13-24-18, dr 2105 ft. South Coalinga Oil Co.'s 1, 35-24-19, dr 3093 ft.

MADERA COUNTY—Fort Wayne - Madera Synd.'s 1, 22-10-17, may abn 2250 ft.

MONTEREY COUNTY—Marland's 1, 32-24-11, rig.

SAN LUIS OBISPO COUNTY — Arroyo Grande Oil Co.'s 1, 21-32-13, sd 4385 ft. Barneyberg Oil Co.'s 1, 25-32-14, co 2270 ft. Miley Oil Co.'s 1, 15-29-17, sd 2540 ft. Panorama Oil Co.'s 1, 7-31-21, co 1575 ft, td 2035 ft. Richfield Oil Co.'s 1, 10-29-17, abn 3130 ft. Union's 1, 34-32-15, dr 750 ft. Waklin Petroleum's 1, 27-27-11, changing to rotary 2610 ft.

SAN MATEO COUNTY—Ashton & Craft's 1, 16-6-5, will be drilled by Shell. Mid-States Oil Co.'s 3, 16-5-5, pumping 5 bbl 2105 ft. Shell's Cowell 1, 8-6-5, 8¼-in csg run to 3515 ft, td 5865 ft; Butts 1, sr 1700 ft.

SONOMA COUNTY—Shell's Murphy 1, 8-5-7, sd 6380 ft; Mossi 1, 8-5-7, sr 1440 ft.

TULARE COUNTY—Ducor Drilling Co.'s 1, 29-23-17, sd 4160 ft. Josephine E. Neame's 1, 24-17-24, sd 2025 ft.

LOUISIANA

CADDO PARISH—
Ohio Oil Co., Smith 25, 12-21-15.... * 4369
The Texas Co., Herndon 7, 14-21-15.. * ....

GRANT PARISH—
W. D. Boll et al, Elias & Williams 1, 10-7-4w ..... * 2104

BIENVILLE PARISH—S. P. Borden's L. & A. 2, 1-15-8, sd 500 ft. E. J. Forrest's Perritt 1, 11-17-16, arr to test 3045 ft.

BOSSIER PARISH—Atlantic Oil Prod. Co.'s Bain 1, 31-23-11, dr 2465 ft. Bahan & Bahan's Holmes 1, 36-23-12, arr to test 3074 ft. R. L. Crooks's Larkin 9, 14-19-11, lcn. Davis et al's Simpson 5, 14-16-12, dr 2200 ft. Doern et al's Bollinger 1, 9-22-11, sd 3900 ft. Ellis & Markley's Hunter 5, 14-16-12, dr 1025 ft. H. S. Goodwin's Tr.'s Mercer 1, 21-16-12, set 4½-inch 1750 ft; Curtis 2, 36-17-13, dr 2110 ft. Hamiter et al's Hamiter 1, 10-23-13, sd 1870 ft. Humble's B. & W. 30, 15-19-11, dr 5230 ft. Magnolia's Cason 1, 1-22-12, set 10¾-inch 805 ft. J. S. McCullough's Hodges 6, 25-16-12, dr 780 ft. Nat. Gas Prod. Co.'s Floyd 1, 25-23-12, rig. Palmerix Corp.'s Roberson 1, 26-23-12, bailing 3069 ft; Caplis 10, 25-16-12, arr to deepen 1553 ft. R. O. Roy's Werner 1, 7-17-11, dk; Caplis 7, 25-16-12, dr 200 ft. The Texas Co.'s Peyton 1, 30-23-11, No. 1 at 3067 ft; Wilkerson 2, 36-23-12, set 6⅝-inch 3072 ft. Sales & Walker's Kilgore 1, 31-23-11, sd 2815 ft. Walker et al's Antrim 1, 28-22-13, sd 2850 ft. Woodley & Collins' L. & A. 3, 15-23-12, sd 3250 ft; Bain 1, 31-23-11, dr 2400 ft; Bollinger 1, 36-23-12, dr 2700 ft.

CADDO PARISH—Bee Oil Co.'s Muslow 1, 29-20-15, 1125 ft. J. W. Burton's Tr.'s Caldwell 8, 18-21-15, dk. Belchic & Laskey's Sharp 4, 10-18-14, coring 4150 ft; Sharp 5, 10-18-15, lcn. W. D. Chew's State 6, 34-21-16, dk. Dixie Oil Co.'s Robert Shaw 81, 13-21-15, dr 4007 ft; Robert Shaw 90, 14-21-15, wosr 4054 ft; Robert Shaw 91, 14-21-15, rig; Robert Shaw 92, 13-21-15, dr 4020 ft; Huckaby 4, 11-21-15, dr 3951 ft. Greenwood Prod. Co.'s Cooper & Ellebre 1, 15-18-14, rebldg dk, 3230 ft. Haynes Bros.' Spell 1, 15-21-15, sd 3911 ft; Spell 2, 15-21-15, sd 3092 ft. Magnolia's W. M. Bell 2, 6-17-16, set 8¼-inch 990 ft; J. W. Furrh 1, 28-18-16, coring 2680 ft; Dillon 18, 24-21-15, dk; Dillon 21, 23-21-15, lcn; Robertson 22, 23-21-15, dr 2888 ft; Hampton A-8, 15-21-15, dr 3915 ft. Pittsburg O. & D.'s Herndon 1, 15-21-15, set 5-3/16-inch 4010 ft. D. C. Richardson's Youree 8, 30-20-15, set 10-inch 101 ft. Shreveport Oil Corp.'s Muslow 2, 32-23-15, lcn. Simplex Oil Co.'s Baird 2, 22-20-16, set 6-inch at 2175 ft; Thomas et al 3, 15-20-15, wosr 2355 ft. Standard Oil Co.'s Barry 12, 11-20-16, sd 1488 ft; Stiles 190, 27-21-16, sd 1984 ft; Hart 18, 34-21-16, wosr 1836 ft. Superior Oil Co.'s Youree 8, 26-20-15, wosr 2318 ft. The Texas Co.'s C. M. L. 47, 23-21-15, sd 3657 ft; Hutchinson 5, 15-15-12, dk; Herndon 9, 14-21-15, wosr 3907 ft; Raines 19, 15-21-15, fsh 4457 ft; Noel B-13, 14-21-15, arr to set tubing 3979 ft. Tubbs et al's Hines 1, 16-14-16, dr 2708 ft.

CALDWELL PARISH—Grayson Oil Co.'s Crockett 1, 6-12-4, sd 2692 ft.

CATAHOULA PARISH—Leonard Pet. Co.'s Knott 1, 32-11-8e, rig; Lochnager Oil Co.'s Beazley 3, 26-9-6e, coring 2000 ft. Standard Oil Co.'s Tensas 1, 23-8-5e, dr 3478 ft.

CLAIBORNE PARISH—El Dorado Chief Oil Co.'s Jones 1, 8-20-6w, rig. Rudeseale et al's Meadows 1, 20-21-7, rebldg dk.

DE SOTO PARISH — American Controlled Oil Co.'s Lanier 2, 5-11-11, moving in rotary 2790 ft. Benson Oil Co.'s Wolf 2, 3-10-13, dr 1923 ft. Carlton Drilling Co.'s Stevens 1, 12-11-16, sd 2300 ft. Dixie Oil Co.'s Jenkins 1, 9-12-11, 6103 ft. Foster et al's Johnson 1, 7-10-12, coring 3190 ft. Hazlett-Simmons' Neely 2, 1-14-12, sd 1925 ft. R. O. Roy's Lee Lee 1, 33-14-12, dk; Whittaker 1, 4-13-13, dr 40 ft; Tracy 1, 3-13-13, rig. Reliance Drilling Co.'s Jones 1, 8-11-14, sd 3018 ft. The Texas Co.'s Grand Bayou P. Co. 5, 25-23-12, set 6-inch 2415 ft. Wingfield et al's Haygood 1, 18-10-12, sd 2400 ft.

FRANKLIN PARISH — Pittsburg O. & D. Co.'s Moore 3, 12-11-6e, sd 2501 ft. Louisiana Pet. Co.'s Tensas 1, 11-11-6e, sd 2503 ft.

GRANT PARISH—W. D. Bell's Calhoun 2, 4-7-4, rig. Swope et al's Fee 3, 18-9-1e, sd 1607 ft; Fee 5, 18-9-1e, dr 700 ft.

LA SALLE PARISH—Elbert Pet. Co.'s Urania B-3, 7-10-2e, sd 700 ft. Wingfield et al's Gibson 2, 2-9-1e, sd 3073 ft.

MADISON PARISH—W. S. Smith's Yerger 1, 51-16-14e, arr to deepen 1700 ft.

MOREHOUSE PARISH — Chas. Bennett's Davis 1, 21-20-4e, dk; Elbert Pet. Co.'s Morehouse Plg. Co. 1, 40-19-7e, dk. Wolfe & McEnnis 1, 13-20-4e, dr 200 ft. The Texas Co.'s Meyer 1, 15-22-7e, sd 2162 ft. United Carbon Co.'s Atkins 1, 26-20-5e, dk.

NATCHITOCHES PARISH — Lawson & Pharris' Crowell Lbr. Co. 1, 22-5-6w, dr 2566 ft.

OUACHITA PARISH—Coco Bene O. & G.'s Cordell 1, 23-15-3e, 2560 ft. J. M. Huber's Edwards 4, 1-18-4e, No. 6 at 2211 ft. Imperial O. & G. Co.'s Stubbs 4, 13-19-3e, No. 2 at 2212 ft; Stubbs 5, 13-19-3e, rig. Jordan Drilling Co.'s Slagle 1, 48-18-4e; McGee 2, 10-18-4e, dr 2100 ft; Pereboon 1, 32-19-4e, dk. Moody-Seagraves' U. S. Govmt. 1, 1-19-3e, dr 2152 ft. Natural Gas & Fuel Corp.'s McEnery 1, 21-19-4e, rig. Ouachita Nat. Gas Co.'s Smith 8, 37-20-4e, dr 2100 ft. Peerless Carbon Co.'s Moore 3, 49-20-4e, dr 2015 ft. Palmer Corp.'s Central 2, 1-19-4e, dr 1630 ft. Southern Carbon Co.'s Philips 3, 8-19-4e, No. 10 at 2170 ft. United Carbon Co.'s Nelson Fee 2, 6-19-5e. J. O. White Tr.'s Schmidt 1, 3-15-4e, rig.

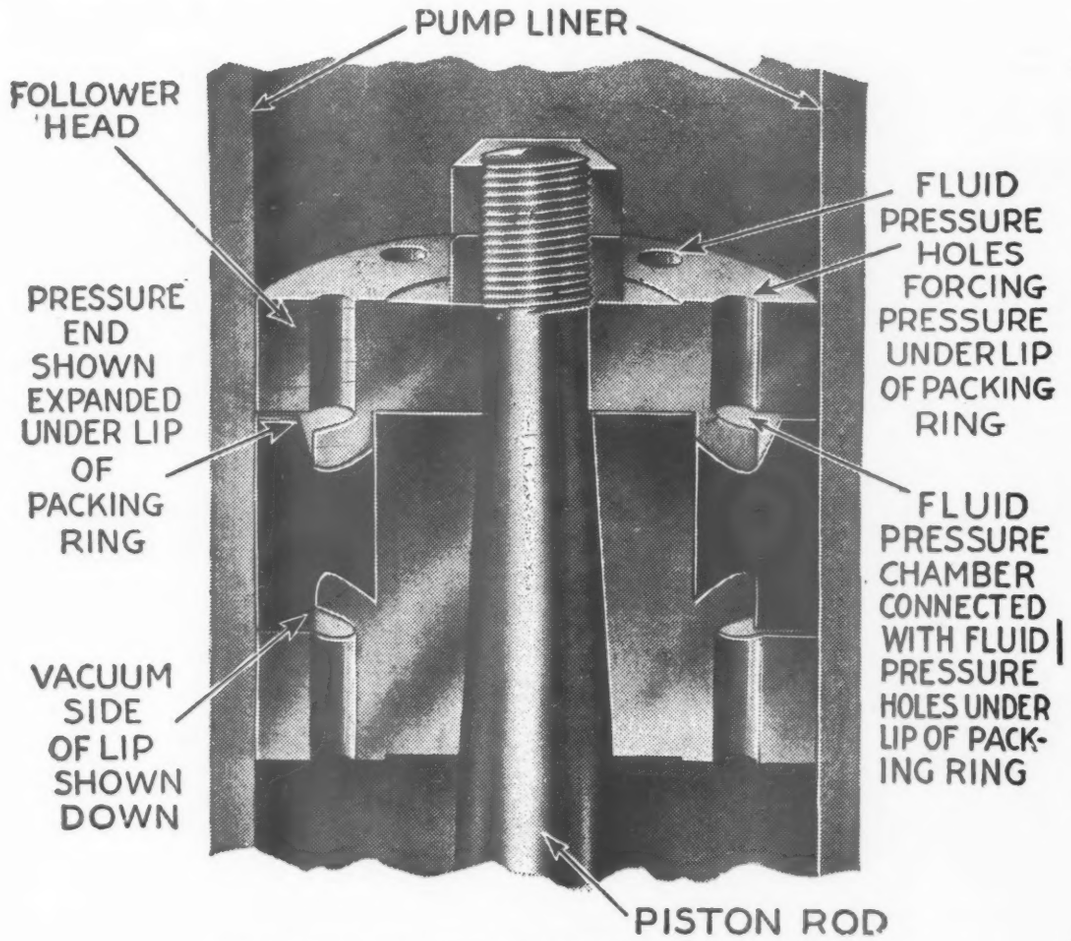
RAPIDES PARISH—Collins Bros.' Allen 1, 25-5-1w, sd 2200 ft. Minnesota Oil Corp.'s Wetty Mark 2, 13-5-4w, sd 12 ft.

RICHLAND PARISH—J. M. Fuller's Boise 1, 33-16-6e. Gulf Ref. Co.'s Millsaps 1, 8-17-6e, r 2706 ft; Rhymes 3, 28-17-16, changing rigs, 2005 ft; Weymond 1, 20-18-6e, coring 2348 ft. Moody & Seagraves' McDonald 1, 9-15-5e, set 6-inch at 2283 ft; Sortor C-1, 17-16-5e, dk; Sortor A-1, 8-16-6e, rig; Sortor B-1, 9-16-6e, rig. Nat. Gas & Fuel Corp.'s Sartor B-3, 19-16-6e, lcn; Sartor B-4, 18-16-6e, lcn; Thomason A, 21-16-6e, dr 150 ft; Thomason A-3, 21-16-6e, dr 140 ft. Noe & Meredith Tr.'s Broughton 1, 4-15-6e, dr 1960 ft. Oliver & Master's Hatch 1, 2-15-5e, dk; Hatch 2, 2-15-5e, dr 1400 ft. Ouachita Nat. Gas Co.'s Cummings 1, 24-17-5e, set 6-inch 2309 ft. Palmer Corp.'s Wayne 2, 23-16-5e, pb to 2475 ft. Ruston Drilling Co.'s Sartor 1, 17-16-6e, No. 55 at 2440 ft. Southern Carbon Co.'s Sartor 2, 20-16-6e, dr 2070 ft; Sartor 3, 18-16-6e, dk; Spann 1, 18-16-6e, dr 1860 ft. United Carbon Co.'s Mulhern 1, 20-16-6e, set 6-inch at 2279 ft. Woodley Pet. Co.'s Osbornel, 3-17-7e, rig.

SABINE PARISH—S. P. Borden's Hamlin Est. 1, 28-10-13, set 12½-inch 143 ft. Dixie Oil Co.'s Steinfield 1, 20-10-12, tested dry 3364 ft. Doern et al's Pickering Lbr. Co. 1, 17-4-11, dr 1250 ft. L. M. Emlet's Bowman Hicks 6, 8-7-12, sd 3710 ft; Bowman Hicks 7, 11-7-14, fsh. 3822 ft; Mansfield H. L. Co. 1, 15-7-14, rigging up on third hole. Ruffian et al's McElroy 1, 33-10-12, dr 3012 ft.

UNION PARISH—Barbour Oil Co.'s Tug-

The Solution to your Pump Troubles


PUMP LINER
FOLLOWER HEAD
PRESSURE END SHOWN EXPANDED UNDER LIP OF PACKING RING
VACUUM SIDE OF LIP SHOWN DOWN
FLUID PRESSURE HOLES FORCING PRESSURE UNDER LIP OF PACKING RING
FLUID PRESSURE CHAMBER CONNECTED WITH FLUID PRESSURE HOLES UNDER LIP OF PACKING RING
PISTON ROD

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or

Mission Sales Company

Esperson Building

Houston, Texas

well 1, 21-22-1e, dr 2213 ft. Carter et al's Security Trust 1, 7-23-1, sd 2250 ft; Hudson 1, 7-23-1e, set 10-inch 102 ft. Industrial Gas Co.'s Hill 2, 9-20-3e, set 12½-inch 187 ft. Interstate Nat. Gas Co.'s Parks 1, 23-20-3e, dk; Stephenson 1, 6-21-4e, lcn. Moody & Seagraves' Robertson 1, 24-22-3e, rig, set 6-inch 2067 ft. John Potts Agt.'s Bernstein 1, 30-20-4e, set 6-inch 2105 ft. Ruston Drilling Co.'s Steele 1, 36-20-3e, dr 2100 ft.

WEBSTER PARISH—Ark. Nat. Gas Co.'s Mitchell 1, 30-23-9, lcn. S. A. Lanes' Miles 1, 24-17-9, sd 1469 ft. C. H. Lyon's Porter-Wadley 1, 36-23-10, dr 2100 ft. Magnolia's Bailry 1, 29-23-9, lcn; Camp 1, 36-23-10, dk; Aarnes Cox 3, 22-21-10, dk; Mixon 1, 22-21-10, dr 4151 ft; Cole 1, 27-21-10, set 6⅝-inch 4340 ft; Munn 1, 29-23-9, arr to retest 2705 ft; J. L. Munn 1, 36-23-10, arr to test 2689 ft; R. J. Munn 1, 29-23-9, dr 975 ft; D. G. Cox 1, 22-21-10, wtg for cas 4309 ft; Mitchell 1, 31-22-9, dk. Harry Morris et al's Lewis 1, 15-23-9, rig. Ohio Oil Co.'s Crichton 2, 21-21-10, dr 4049 ft; Bodcaw 38, 15-21-10, set 6⅝-inch 4250 ft. Sun Co.'s Haines 1, 30-23-9, lcn. Woodley Pet. Co.'s Cox B-1, 23-21-10, cemented back to 4512 ft. C. H. Lyons' Sexton 1, 36-23-10, set 6-inch 2650 ft.

WINN PARISH—Ohio Oil Co.'s Rolen Account 1, 5-12-1w, tested dry at 4454 ft. H. M. Roark's Southern Mineral Co.'s 3, 9-11-3w, set 6⅝-inch 935 ft.

WEST CARROL PARISH—Palmer Corp.'s White 1, 2-19-10, sd 2445 ft.

ARKANSAS

UNION COUNTY—
Rovenger O. Corp.'s Perdue 1 2-17-14 * ....

BRADLEY COUNTY — Johnson & Adams Southern Lbr. Co. 1, 12-12-12, dr 2520 ft.

CLARK COUNTY — McKenzie Oil Co.'s Eaken 1, 9-11-19, arr to deepen 646 ft.

COLUMBIA COUNTY — Mitchel et al's Franks 1, 25-19-22, sd 150 ft. Van Hagen Sydn.'s Pickler 1, 19-19-22, sd 850 ft; Mason 1, 31-19-22, rig.

GRANT COUNTY—Jones et al's Meeks 1, 5-4-11, sd 1400 ft.

LINCOLN COUNTY—Pine Prairie O. & G. Co.'s Carter 1, 33-10-6, sd 2176 ft.

LITTLE RIVER COUNTY—Grote et al's Allen 1, 2-13-31, sd 2941 ft.

MILLER COUNTY — Dave Bruton et al's Red River Farm 1, 2-17-26, rig. Guess et al's Saunderson 1, 14-15-26, dr 3024 ft. Lenze et al's Dale 3, 23-15-25, rig. Pitcher et al's Arkansas Timber Co. 1, 21-17-11, sd 3107 ft. Pure Oil Co.'s Gregory 1, 10-17-14, ¶5 at 2586 ft. Dr. Rushing et al's Gregory 1, 11-17-14, tested sw at 2740 ft; Gregory 2, 11-17-14, dr 1720 ft. Rovenger Oil Corp.'s Perdue A-1, 10-17-14, rig. Rhodes Tr.'s Union Saw Mill 1, 14-19-11, dk. Semroll et al's Finley 1, 12-17-14, sd 2710 ft. Simmons et al's Green 1, 3-16-16, dk. Timberlake et al's Dumas 1, 11-17-14, rig. W. R. Keever's Ezell B-2, 12-17-15, sd 120 ft.

EAST TEXAS

Completion

PANOLA COUNTY—
H. Hines, Jones 1, G. Goodwins sur * 2514

ANDERSON COUNTY — Brooks et al's Henby 1, Joseph Mertz sur, dk. Humble O. & R. Co.'s Jones Jr. 1, David Roberts sur, rig.

CASS COUNTY—Hickman et al's Mott 1, A. Douthit sur, set 12-in at 202 ft.

CAMP COUNTY—J. C. Rogers' Boyd 1, R. M. Montgomery sur, sd 750 ft.

CHEROKEE COUNTY — Panhandle Oil Co.'s Whalen 1, J. Jordan sur, sd 1300 ft. Joe Walter et al's Barns & Deloach 1, Perry Reese sur, r 979 ft.

FREESTONE COUNTY — Roxana Pet. Corp.'s Marshal 1, D. E. Marshall sur, abn 777 ft.

HENDERSON COUNTY—W. K. Cayton et al's offer & Nash 1, H. Jefferson sur, sd 2910 ft.

HARRISON COUNTY—Cox et al's Furrh 1, J. Short sur, tested dry 1020 ft. Doney et al's Furrh 2, J. Lipscomb, sur, dk. Fuller & Fuller's Furrh 3, A. Short sur, rig. Magnolia Pet. Co.'s Vincent 1, R. W. Bedford sur, arr to deepen 1911. Mitchell et al's Jones 1, J. Lipscomb sur, sd 957 ft. State Line O. & G. Co.'s Waterman 6, J. Short sur, tested dry 2871 ft. Tylong O. & G. Co.'s Armstrong 1, S. Holloway sur, coring 1984 ft.

MARION COUNTY—Lumberman's Oil Co.'s Bonham 1, R. Potter sur, sd 1200 ft. Trimont Pet. Co.'s Stiles 7, N. Gupton sur, dk.

NACOGDOCHES COUNTY—P. R. Harris et al's Griffin 1, J. W. Anderson sur, sd 1301 ft. Stein & Lewis' Birdwell 1, Jose A. Chirino sur, arr to deepen 1100 ft. Union Sulphur Co.'s Whitemark 1, Jose A. Chirino sur, hole junked 2812 ft.

PANOLA COUNTY—S. H. Gardner et al's Roquemore 3, B. C. Jordan sur, ¶2½ at 2211 ft; Craven 1, Ben C. Jordan sur, rig. H. Hines' Baker 1, G. Goodwin sur, dr 1650 ft. Magnolia's Downs 2, J. L. Mathews sur, dk. Adams 1, J. M. Birdsong sur, lcn; Tilberry 1, Jane Thorpe sur, coring 1929 ft; Baker 3, B. C. Jordan sur, set 8¼-in at 970 ft; Leigh Trosper 1, B. Stephens sur, coring 1943 ft; Steele 14, B. C. Jordan sur, r 1920 ft. Nat. G. & F. Corp.'s Adams 1, Evans Braken sur, set 6-in at 944 ft; Adams 2, Evans Braken sur, rig. D. Thomasson's Crenshaw 3, J. Womach sur, sd 1007 ft. The Texas Co.'s Adams B-8, Isom Hatcher sur, lcn.

RUSK COUNTY—C. M. Joiner et al's Bradford 1, J. Ximines sur, sdtr bit 1110 ft. Magnolia's Durren 1, Agulla Norris sur, dk. McCurrie et al's Sparks 1, Jessee Carse sur, sd 2148 ft. D. Osborne et al's Mathews 1, D. Cortinas sur, sd 2330 ft.

SHELBY COUNTY—Magnolia's Pickering Lbr. Co. 1, Wm. J. Crane sur, dr 3780 ft.

SMITH COUNTY—Humble's Van Hovenberg 1, Nancy Childs sur, coring 567 ft.

UPSHUR COUNTY — S. W. Richardson's Newsome 1, J. R. Davis sur, sd 2025 ft; Minor 1, A. Lowery sur, fsh 3500 ft.

MOUNTAIN STATES

WYOMING

ALBANY—Union of Calif., 33-17-75, rig.

BIG HORN—Agate Oil Co., ne, 13-51-92, pb and cemt at 842 ft. Utah-Southern Oil Co.'s 3, 29-56n-97w, dr below 2632 ft. Wisconsin-Himes, 9-54-94w, delayed by title trouble, sd at 673 ft. Northern Wyoming Oil Co., 20-52n-93w, dr 1100 ft.

CARBON—Graybeal Synd., 16-28-91, sd 4380 feet.

CONVERSE—A. E. Tylee, ne 8-32-72, sd. Criterion Oil Co.'s Irvine 1, 5-31-70, bailing water, td 3579 ft. John Ackard's McKinley 1, 21-31-69, sd 3000 ft.

FREMONT—Producers & Refiners' Muskrat 1, 34-34-92, dr 2680 ft, carrying 10-in. Texas Production Co.'s Alkali Butte 1, 1-33-92, dr 2455 ft. Zola Oil Co.'s Crook's Gap 1, 25-27-93w, sd 3750 ft. Iowa-Wyoming Inv. Co., 30-1s-2e, bottomed at 1500 ft.

JOHNSON—Fairway Oil Co.'s Crazy Woman 1, 7-47-82, set csg at 2162 ft. Tarrant Synd.'s 2, 17-46n-82w, sd 3625 ft.

LINCOLN—Fontenelle Oil Co.'s 1, ne ne, 1-24n-113w, resuming at 1077 ft. Calif. Co.'s Snyder Basin 1, 11-29n-115w, td 1117 ft, standing cemented, will resume in the spring.

NATRONA—Combs Dev. Co., 12-39-78, dr 1825 ft. Spindletop Synd.'s 1, se 32-30-81, moving in material.

NIOBRARA—Penn-West Pet. Co., 13-35n-62w, bottomed at 800 ft. Hollingsworth Bros., 17-39-79, fas.

PARK—Union of Calif.'s Taylor 1, 22-47-101, cleaning out 3712 ft. Fred G. Ostland, Hoodoo Ranch 1, 23-51-101, sd 1740 ft. Honolulu Oil Co.'s Four Bear 1, 29-48-103, sidetracking csg 2780 ft. E. H. Rosenburg, ne 25-58n-98w, dr 1300 ft. Ydoc Oil Co., ne 6-51-101w, sd 915 ft. Honolulu Oil Corp.'s Pitchfork 1, 14-48n-102w, lcn. Hoodoo Oil Co., 36-51-101, redr 400 ft. Ohio Oil Co., 27-53-101, dr 2020 ft.

PLATTE—Walter Adams Tr., 13-25-66, no report.

SWEETWATER—Boar's Tusk Oil Co., 16-23-104, hole obstructed at 710 ft, td 1536 ft. Prairie O. & G. Co.'s Tucker 1, 18-13-99, sd 150 ft. P. & R.-Marland of Colo., 26-20-104, sd 485 ft. Tower Pet. Co.'s 1, 6-14n-103w, dr 800 ft, carrying 15½-in. Custer Pet. Co., 24-12-100, shooting crooked hole at 1050 ft. Sormir Pet. Co., se 13-10-100, dr 1100 ft.

WASHAKIE—Unnamed persons, ne 15-44-64, dr suspended for the winter at 600 ft.

WESTON—Gose Syndicate, ne 28-47n-65w, trying to pull 4¾-in, td 4850 ft.

UINTA—Uinta Oil & Dev. Co., 21-51n-120w, dr below 2000 ft. Evanston O. & G. Co., 27-15-120, diamond dr below 540 ft. California Co.'s 1, 12-17-116, moving in material. Wilcox & Henley, se 3-14n-118, dr below 400 ft.

NEW MEXICO

CHAVES—Buffalo-Roswell, 1-24-11-27, sd 4300 ft. Arena Oil Co., 1, 18-13s-31e, dr 2900 ft. McQuigg Bros., Neis 1, 7-5w-29e, standing at 1525 ft. Berrendo O. & G. Co., Roswell 1, 5-10-27, dr 250 ft.

CURRY—Hasson Pet. Co., Laird 1, 22-8-36, spd and sd. Clovis O. & G. Co., Hoskinson 1, 21-3n-36, sd 4010 ft.

GUADALUPE—Hanchett Oil Co., Rutherford 1, 24-8-24, dr 4265 ft. Union Pet. Co., McMullen 1, 24-5n-16, sd 235 ft. Navajo Oil Co., Goard 1, 10-31-7, standing at 2538 ft.

LEA—Midwest Ref. Co., State 1, 9-19s-38e, fsh, td 1560 ft. Marland Oil Co., 1, 19-26-37, dr 900 ft. Marland Oil Co., Seideman 1, 4-25s-36e, derrick. Marland Oil Co., Roberts 1, 20-23s-35e, mvg in materials. Marland Oil Co., Fardner 1, 34-23s-31e, mvg in timber.

McKINLEY—Smart & Reid, 7-17-9, rig. Inland Oil Corp., 22-18-10, dr 1362 ft. S. Dysart 1, 21-14-9, sd 1650 ft. Continental Oil Co., Carrica 1, sw 9-17n-7w, abn 3190 ft. Jenkins Oil Co., 1-16n-9w, td 1301 ft. Williams et al, 2, 30-18-8w, standing at 1795 ft. Reliance Oil Co., Valentine 1, 16-17-9, dr 1300 ft. Producers & Refiners, Hospah 2, 12-17-9, dr 1160 ft.

QUAY—Gibson Oil Corp., 1, 25-8-32, prep to deepen, td 3500 ft.

SAN JUAN—Continental Oil Co., Munoz 17, 2-29-19, dr 4507 ft. Kansas-Colorado Oil Co., Atterberry 1, 23-31-11, sd 1850 ft. T. C. N. Oil Co., Lanier 1, 9-29-11, sd 547 ft. Huntington Park Oil Co., 2, 29-30-9, dr 4450 ft. Nollsch et al, Mullen 1, 31-29n-9w, dr 255 ft. R. M. Smith, Abrams 2, 23-29-11, stdg at 532 ft. Huerfano Oil Co., Wiltbank 1, 25-29-11, standing at 800 ft. Union Oil & Mining Co., Pine 2, 8-29-9, dr 3050 ft. San Juan Pet. Corp., 1, 9-29n-13w, dr 2800 ft. A. Johnson, Trustee, 1, 34-29n-11w, 6⅝-in pipe cmtd at 1732 ft. Poole & Peebles, Lawson 1, 9-30n-11w, dr 870 ft. Co-Ne-Mo 1, 28-29-11, sd 100 ft. Kirtland Drlg. Co., Stallings 1, 10-29-15, water trouble at 500 ft.

SOCORRO—Abo Oil Co., 1A, 14-3s-6e, wet 12½-in at 600 ft and sd.

TORRANCE—Duran Dome Oil Co., 1, 31-2-14, dr 1587 ft. F. G. Wilson, Trustee, Pace 1, 12-6n-27, standing at 2215 ft. Bluhall O&G Co., 20-6n-10e, wtg casing, td 890 ft. San Juan Coal & Oil, Randall 2, 26-6n-10e, dr 5155 ft.

VALENCIA—Acme Oil Co., 26-6-3, undrr 2210 ft.

MONTANA

BIG HORN—Selig Oil Co., 1, se 21-6s-35, sd 865 ft, negotiating to complete.

CARBON—Ohio Oil Co., Northern Pacific 1, 11-7s-21e, dr 3815 ft. Atlantic Oil Co., 3, 20-7s-24e, dr below 1005 ft.

CASCADE—Lone Star, McLean 1, 12-21n-3w, sd 100 ft.

CHOTEAU—Geraldine O&G Co., sw ne, 1-21-11e, rigged.

FERGUS—Melton Corp., Fenholt 1, 24-21-17, sd 2290 ft. Mineral Research Oil Co., 1, 13-17-23, bottomed at 843 ft. Will resume with diamond drill.

GARFIELD—Carroll Bros., nw ne 6-14n-31e, stdg cmtd at 1440 ft.

GLACIER—Rimrock Oil Co., 29-35-5w, rig.

HILL—A. H. McFarland, sw 15-30-13e, sd 100 ft. Gad-Hamilton et al, Goldstone 1, sw 25-35-93, rig. T. P. Jones et al, Perkins 1, 34-33-12e, bottomed at 3345 ft, waiting for casing.

LIBERTY—Bear's Den Oil Co., Laird 1, 31-37n-6e, running 6-in at 2400 ft. Sunburst O&R Co., Disotell 1, 10-37n-5e, oil in the Ellis at 2950 ft.

MADISON—Madison County Oil Co., 1, ne 17-7s-1w, sd 1700 ft.

MUSSELSHELL — Manhattan Oil Co., ne 24-7-24e, sd 60 ft. McElwain Oil Dev. Association, 2-11-22, rig.

RICHLAND—Community Drlg. Co., Pioneer 1, rigging to drill deeper from 2600 ft.

ROOSEVELT—Pioneer O&G Co., 1, se 35-27-51w, dr in oil shale at 2715 ft.

PONDERA—Claggett Dev. Co., 8-27-4w, spd and sd. Continental Dev. Co., sw 19-27-3w, abn.

PHILLIPS—Big Dome Oil Co., Bloomberg 1, ne 1-32-32e, sd 980 ft.

SWEETGRASS—Shoshone Consolidated, nw 23-2n-15w, resuming at 2420 ft.

TETON—Craig-Speer-McCutcheon, 9-23-2w, dr 100 ft.

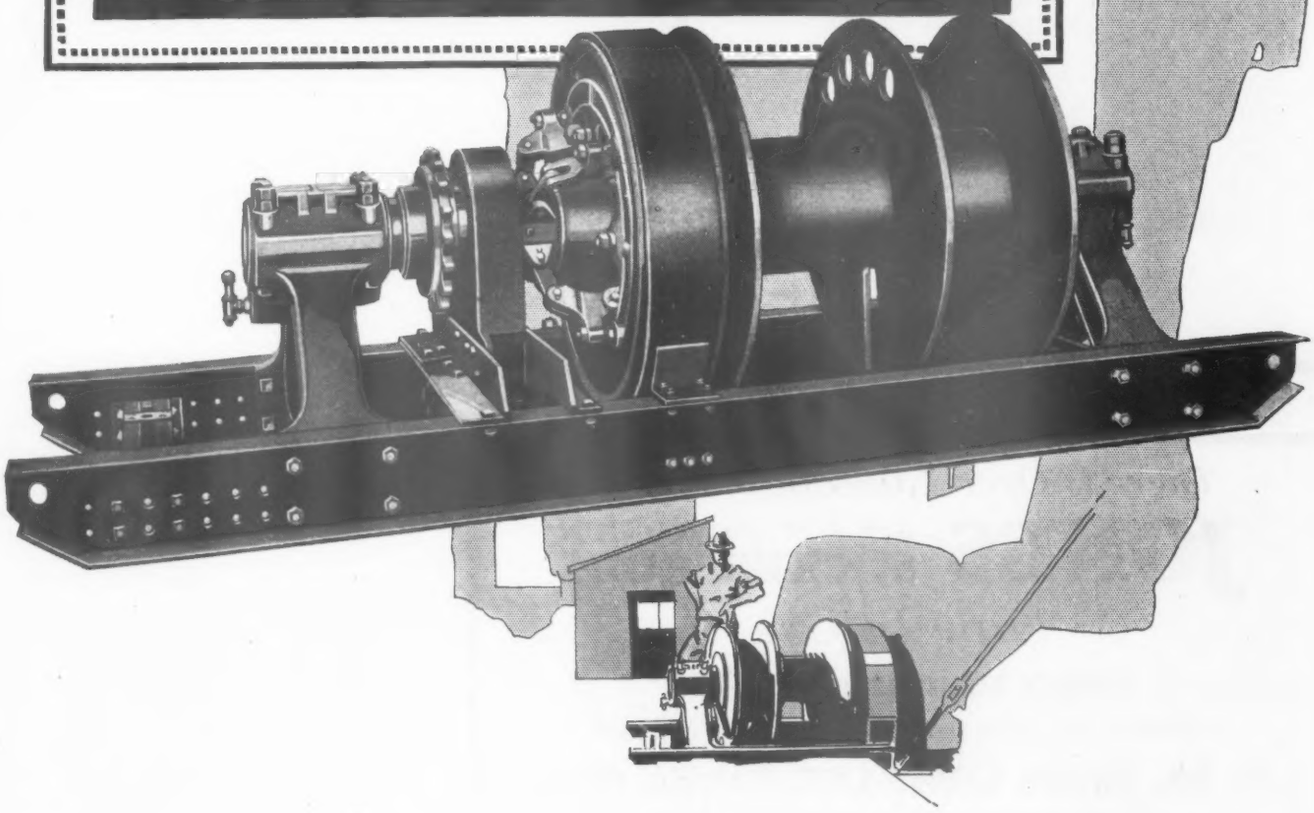
TOOLE—Hi-Line-66, Toole 1, ne 27-36n-2e, gas showing at 2350 ft. Sunburst O&R Co.,

NATIONAL CHAIN DRIVEN SAND REEL

TYPE "J"

DESCRIPTIVE BULLETIN No. — 18 N ON REQUEST

THE NATIONAL SUPPLY COMPANIES



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TULSA OFFICE: 422-423 McBIRNEY BLDG.

Grandview 1, 10-34n-32, rig. Madeline Oil Co., Swenson 1, 33-35-4w, dr at 1510 ft.

COLORADO

ARCHILUETA — Kansas-Colorado Oil Co., 17-34-2w, will resume at 1300 ft.

BACA—Phillips-Jones, Jones 1, 26-34-48w, sd 1745 t.

BOULDER—Left Hand Oil Co., Prechtl 1, 34-3n-70, casing trouble at 2057 ft. Essok Oil Co., Martin 1, 5-1s-70, sd 5225 ft.

EL PASO—Grand Union Oil Co., John Jr., 2, 19-17s-67w, sd 775 ft.

ELBERT—Botts, Likkick et al, se 1-8s-59, dr below 600 ft.

HUERFANO—Kinney-Coastal Oil Co., Pine 1, 24-26s-68, dr 1215 ft.

JACKSON—North Park Oil Co., Goettler 1, 9-6n-82w, standing at 506 ft.

JEFFERSON—Woods et al, 1, 30-3s-69, lcn. Will spud March 1.

LAS ANIMAS—Parker Club, Inc., Adams 1, 32-34-55, abandoning at 3905 ft. Foley & Goldsworthy, Government 1, 11-30-50, standing at 2010 ft. Reiter-Foster & Phillips Pet. Co., 23-29s-56, dr 1240 ft.

LA PLATA — East Long Beach Oil Co., Aspaas 1, 10-34n-11w, set 10-in at 902 ft. Detroit Oil Assn., Olbert 1, 9-35-12w, dr at 1640 ft.

LOGAN — Northeastern Colorado Oil Co., State 1, 36-8n-55w, sd 5582 ft.

MESA—Eureka Oil Co., Holly 2, 24-1-1e, dr at 330 ft, showing gas.

MOFFATT—Ohio Oil Co., Kuykendall 1, 22-21n-11w, sd for the winter. Reiter-Foster Oil Co., State 1, 16-12-100, sd 2240 ft. Yarg Prod. & Refining Co., 205, 26-4n-92w, dr 3482 ft. Alliance Oil Co., Milliken 1, 14-4n-92w, dr 950 ft.

MONTEZUMA—Coon & Cotton, Hall 1, 9-35n-13w, sd 1400 ft.

MONTROSE—Indian Pet. Corp., Gilmore 1, 4-45-16w, shut down at 4210 ft.

RIO BLANCO—Texas Prod. Co., Freeman 1, 27-3-94, dr 5340 ft. Argo Oil Co., sw 9-2s-96w, standing ready to spud.

ROUTT—Great Western Oil Co., State 1, 17-60n-56w, standing at 1700 ft.

WELD—Platte Valley Pet. Corp., Patterson 1, 24-6n-61w, undrr 6-in to bottom at 3760 ft, oil showing.

WEST TEXAS

Completions

Company, Well and Location		Initial Production Bbls.	Depth
CROCKETT COUNTY—			
Osage Oil Corp. et al, Halff 3.....		†	425
World Oil Co., Schneeman 1-B		*	2880
CULBERSON COUNTY—			
Jas. Gardner et al, Radford 1.....		†	635
HOWARD COUNTY—			
Marland Oil Co., Richardson 1		*	3618
JONES COUNTY—			
Hutson-Weaver et al, Smith 1-A....		40	2504
PECOS COUNTY—			
Henshaw Oil Corp. et al, Corder 1..		*	2517
Moody Corp., Corder 1		*	2960
Transcontinental Oil Co., Blackstone-Slaughter 1		*	4988
TAYLOR COUNTY—			
Owen-Sloan Oil Co., Latimer-Toombs 1		*	2985

ANDREWS COUNTY—Deep Rock Oil Co.'s Harris 1, elev 3173 ft, top salt 1705 ft, sd 2970 ft.

BORDEN COUNTY—Dixon Creek Oil Co.'s Clayton-Johnson 1, dr 545 ft. Marland Oil Co.'s McDavid 1, top lime 2410 ft, dr hfw 2780 ft; Murphy 1, lcn.

BREWSTER COUNTY — Cole & Cowden's Jackson-Harmon 1, sd 200 ft. J. M. Hickey et al's Jackson-Harmon 1, sd 926 ft; Van McPhail et al's McIntyre 1, dr 1705 ft. Mid-Kansas O. & G. Co.'s Turney 1, dr 2950 ft. Reese & White's Kimball 1, sd 1390 ft. Wilcox & Anderson's Gage 1, sd 1855 ft.

COKE COUNTY—W. H. Brown et al's Foster 1, dr 3210 ft. Lipan Oil Co.'s Conner 1, sd 3375 ft; Rawlings 1, sd 2736 ft.

CONCHO COUNTY—The Exploration Co.'s Hartgrove 1-A, sd 940 ft. aSrtain Oil Co.'s Everidge 1, lcn.

CRANE COUNTY—Crane County Dev. Co.'s Mosley-Brookfield 1, elev 2325 ft, top salt 819 ft, top lime 2072 ft, dr 2680 ft. Gulf's Waddell 3, elev 2724 ft, top lime 3055 ft, small show oil after shot 200 qts, 3245-3309 ft, td 3412 ft.

CROCKETT COUNTY—J. S. Cosden &

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Unprecedented performance and maintenance economy have characterized the application of Timken Bearings throughout Industry. Timken-equipped electric motors are running entirely true to form. They are far more capable, and require least attention, even on the jobs where the life expectancy of motors has been lowest.

The remarkable service records of Timken-equipped motors could not come from excellent friction-elimination alone. It also takes such advantages as the self-contained full thrust capacity of Timken Bearings, the greater load area and increased rigidity, the efficient bearing seal, the entire freedom from shaft wear, and the ideal starting characteristics.

All the superiorities of a Timken-equipped motor are maintained whether it is mounted on floor, wall or ceiling; whether it drives direct, through belt or rope, or through gears of *any* type. Only full Timken thrust-radial capacity makes this possible. Different motors are no longer required for all the different jobs, so long as the rating of the motor is not exceeded.

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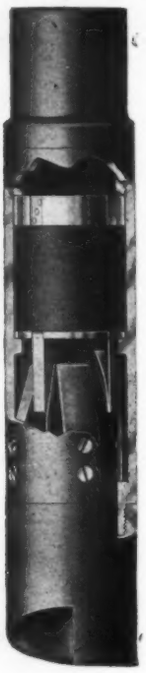

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It may be used as an overshot either with or without the packing assembly.

If a straight hard pull does not release the fish, connect the pumps and circulate with oil until the fish is loose. Jobs have been loosened with this tool under pressure as high as 1200 pounds for periods of 12 to 24 hours. Circulation is positively sealed between the overshot and the fish, forcing circulation to the bottom.

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PECOS	VAL VERDE	REAGAN	MOTLEY
	TERRELL	IRION	

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Write for Maps and Information

REFERENCES: Mercantile Agencies and Nat'l Banks of Fort Worth
16 Years in Texas

C. W. WEBSTER

PETROLEUM BUILDING, FORT WORTH, TEXAS

Co.'s Paul Perner 1, ur 805 ft. W. W. Donnelly et al's Massie 1-A, sd 300 ft; Shannon 1, sd making gas 1664-80 ft; Shannon 2, rig; Todd 1, materials. Henshaw & McMan O. & G. Co.'s W. Owens 1, rig. Humble O. & R. Co.'s Sorg 2, elev 2714 ft, top salt 995 ft, dr 2425 ft. M. B. Wyrick et al's Halff 1, sd 330 ft. Osage Oil Corp. & T. T. Word's Halff 2, sd 970 ft; Halff 3-A, skid rig.

CULBERSON COUNTY—Deep Rock Oil Co.'s T&P Fee 2, sd 1210 ft; Sway 1, sd 1440 ft. Dittman Drilling Co.'s Miller 1, sd 1767 ft. J. M. Hickey et al's Finley 1, fsh 650 ft.

JEFF DAVIS COUNTY—Humble O. & R. Co.'s C. Flores 1-A, elev 4239 ft, cem cas 3920 ft. Sam Means et al's (was E. L. Smith Oil Co.) Means 1, sd 2563 ft.

ECTOR COUNTY—O. H. Sharp et al's Davis 2, materials.

EL PASO COUNTY—Ellsworth & Haunt's McKinney-Jones 1, rig.

FISHER COUNTY — Cranfill-Reynolds & Sun Oil Co.'s Young 1, cas trouble 2880 ft. Rainey et al's Marberry 2, dr 2880 ft. Sinclair O. & G. Co.'s Steele 1, rig.

GARZA COUNTY—Emerald Oil Co.'s J. M. Boren 2, top salt 660 ft, set cas 1708 ft. Gulf Prod. Co.'s Swenson 1-A, elev 2492 ft, top salt 495 ft, top lime 2075 ft, dr lime 4685 ft. Marland Oil Co.'s Pippen 1, rig.

GLASSCOCK COUNTY—Josey & Flinchbaugh's Cox 1, lcn. Marland & Texon's Settles 1, fsh 3206 ft. R. R. Penn's Hughes-Johnson 1, lcn. Merriwether Oil Co.'s McDowell 2, rig.

TOM GREEN COUNTY—Fitzgerald et al's Bennett 1, sr 1955 ft. R. O. Haubelt et al's Johnson 1, sd 1205 ft. Lone Eagle Oil Co.'s Sharp 1, rig. Marland Oil Co.'s Johnson 1-A, dr 3215 ft. World Oil Co.'s Pulliam 2, sd 685 ft.

HOWARD COUNTY—Bristow & Merrick's Hocks 5, rig; Roberts 1, sd 1602 ft. Coyle-Concord Oil Co.'s Roberts 4, co after shot 1883 ft; Roberts 5, dr 1345 ft. F-H-E Oil Co.'s Roberts 3-A, rig; Roberts 4-A, lcn; Roberts 2-B, set cas 1800 ft; Roberts 1-C, sd 1960 ft; Roberts 1-E, dr 800 ft. W. W. Donnelly et al's Clay 1, lcn. Gulf Prod. Co.'s Chalk 4, elev 2647 ft, co after shot 1780 ft. Godley O. & G. Co.'s Hooks 2, sd 1875 ft. Greene O. & R. Co.'s Clay 1, spudding. Henshaw et al's Settles 1, dr 225 ft. Magnolia Pet. Co.'s Mary-Chalk 10, fsh 892 ft; Kelly-Chalk 10, dr 1325 ft; Harry Hyman 1, dr 1240 ft; Roberts 2, elev 2737 ft, top lime 2033 ft, dr hfo 2974-79 ft; Roberts 3, dr 1115 ft; Roberts 4, rig; Roberts 5, dr 2355 ft; Roberts 7, rig; Roberts-Magnolia 1, co 985 ft. Mays-Nixon et al's Flowers 1, dr 1835 ft. Merrick & Lamb's Clay 3, sd 1734 ft; Clay 4, lcn. Owen-Sloan Oil Co.'s Roberts 3, set cas 1314 ft; Roberts 4, lcn. Sprague Oil Co.'s Roberts 1, spd and sd. Sun Oil Co.'s Settles 1, flow by heads, dr pay 2535 ft. Tate-Weekly & Tubbs' Roberts 3, set cas 1596 ft; Roberts 4, spudding. Vitek Oil Co.'s Clay 2, dr 1685 ft. Bert Weekly Oil Corp. et al's Roberts 1, fsh 1465 ft.

HUDSPETH COUNTY — American Land Co.'s Lockhart-Roseborough 1, sd 180 ft. Western States Oil Co.'s Gardner-Moseley 1, dr 1025 ft; S. W. Moore 1, dr 1325 ft.

IRION COUNTY—P. E. Hill et al's Horney 1, sd 940 ft. F. E. Webb et al's Nutt 1, spd and sd.

JONES COUNTY—R. F. Garland & Co.'s Glynn 1, fsh 2430 ft. Phillips Pet. Co.'s Winters 5, spudding. Rhodes & Higher's Howell 1, rig. J. N. Sloan et al's Bennett 1, spd and sd. W. G. Stough et al's Willis 1, sd 1740 ft.

KENT COUNTY—Marland & Texon O. & L. Co.'s Bilby 1, dr 845 ft.

KING COUNTY—Humble O. & R. Co.'s Pitchfork 1, crooked hole 3680 ft.

LOVING COUNTY—Delaware Oil Co.'s Lockhart-Ramsey 1, sd 650 ft. Lockhart et al's Fee 1, top salt 708 ft, fsh 2260 ft. Owen-Sloan Oil Co.'s Johnson 1, elev 2943 ft, top salt 955 ft, fsh 3990 ft.

MIDLAND COUNTY — Gholson et al's Moreland 1, sd 1650 ft. O. H. Shoup et al's Parks 1, spudding.

MITCHELL COUNTY — Boehm Drilling Co.'s Hyman 1, sd 505 ft. Paul Teas et al's Mills 1, elev 2187 ft, top lime 1298 ft, co after shot 1766 ft.

PECOS COUNTY — Benedum-Trees' Corder 1, rig. Buell & Hagan's Pryor 1, rig. Day Bros. & McKnight's Yates 1, elev 2213 ft, top salt 440 ft, making oil and gas, dr 1330 ft. Bob Elmore et al's M. Holmes 2, elev 2190 ft,

Be Careful In The Selection Of Lubricants For Your Motorized Equipment

Passenger cars and trucks of different makes vary considerably in type and design.

Be sure that you understand: (1). The type of lubricating system used, which determines the method of feeding the oil. (2). The type of cooling system used, this factor having more or less effect on the operating temperatures of various parts of the motor.

The proper lubrication of motor equipment means not only the lubrication of the engine cylinders — but the complete lubrication of all of the moving parts of the motor. Much harm can result from the use of too heavy an oil in a pressure system not designed to handle it—also where the "splash" system is used, the oil must not only flow easily, but must atomize readily so as to reach certain bearings which can be lubricated only by a fine mist. Your passenger cars and your trucks are designed to give you many years of service—if they are properly lubricated.

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There is a Humble Oil which is specially prepared to meet every bearing need in your plant, your trucks, or in your automobile.

Humble Motor Oils are the result of years of experience in lubricating internal combustion engines. The recommendations of Humble engineers are an added factor of safety. Whether you operate one passenger car and truck, or a whole fleet of motorized equipment, it will pay you to learn more about Humble Oils.

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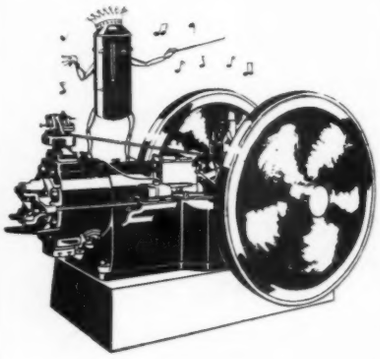

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top salt 435 ft, sd 990 ft. Everett et al's Fields 1, spd and sd. Furman Oil Co.'s McNear 1, materials. Gibson Oil Corp.'s Russell 1, elev 3509 ft, dr 1820 ft. Kershaw & Livingston's Cannon 1, top salt 1050 ft, dr 1530 ft. Kirby Pet. Co.'s Tippett 1, lcn. McDonald & Stanley's Parsell 1, rig. Michaelson & Tabot's Pecos River 1, spd and sd. Mid-Kansas O. & G. Co.'s Pryor 1, dr 115 ft. Miller & McNee's Tyrell 1, cellar. Oregon Oil Corp.'s Yates 1, salt at 601-720 ft, dr 1000 ft. Phillips Pet. Co.'s Smith-Monroe 1, elev 2450 ft, top lime 1220 ft, sd for storage 1227-1350 ft; El Paso Cattle Loan Co. 1, lcn. Roxana & Kirby's University 1, rig. Rowan & Tong's Scharf-Blackman 1, machine. Skelly Oil Co.'s Tippett 1, rig. B. J. Spikes et al's Brown 1, sd 625 ft. Stidham & Tharsher's Belgrade 1, top lime 1280 ft, sd 1460 ft. Transcontinental's University 1, dr 115 ft. Vacuum Oil Co.'s Elsinore 1, dr 835 ft. World Oil Co.'s M. Cerf 1, elev 3435 ft, dr 1100 ft; Kloh 1, elev 2810 ft, cavey hole 545 ft.

REAGAN COUNTY—The California Co.'s University 4, spudding. Hagan-Emch & Marland Oil Co.'s University 1, top salt 1065 ft, dr 1215 ft. Marland Oil Co.'s University 1, rig. Moody Corp.'s Walters 1, rig. Roxana Pet. Corp.'s Sawyer 1, rig. Skelly Oil Co. et al's University 2 ,rig. The Texas Co.'s Sugg 3, dr 335 ft. Texon O. & L. Co.'s University 1-B, Group 1, dr 7665 ft. J. T. White et al's Schafer-Sterling 1, top salt 1275 ft, dr 2405 ft.

REEVES COUNTY—The Exploration Co.'s Kinney 1, dr 1765 ft. D. R. Thompson et al's Eddins 1, co 5130 ft. Grisham-Hunter Corp.'s Rathage-Cenner 1, dr 940 ft. Vacuum Oil Co.'s Grisham-Hunter 1, dr 1035 ft. World Oil Co.'s B. T. Biggs 1-B, elev 3068 ft, top Delaware lime 2594 ft, dr 2605 ft.

RUNNELS COUNTY—Empire G. & F. Co. and Collins' Gray 1, elev 1771 ft, set cas 2540 ft. Gibson-Johnson et al's Harris 1, lcn; Serratt 1, dr hfw 1580 ft. Globe Pet. Co.'s Webb 1, sr 1450 ft. Griswold et al's Beyer 1, sd 635 ft. Jones Oil Synd.'s Hale 1, fsh 1905 ft. Kenwood Oil Co.'s Talley 1, sd 1720 ft. McLean et al's Clayton 1, sd hfw 1050 ft. Henry B. May et al's Schneider 1, elev 1666 ft, sd 1325 ft. Marland Oil Co.'s Russell 1, lcn. Marland & E. L. Smith Oil Co.'s Herring 1, lcn. Miles Oil Co.'s Lawhon 1, set cas 2310 ft. Royal Pet. Co.'s Willingham 1, sr 1450 ft. R B. Summers et al's Reese 1, spudding. Swensondale Oil Co.'s Werner 1, elev 1803 ft, co 2080 ft. Vacuum Oil Co. et al's McMillan 2, elev 1700 ft, swab 150 bbls oil, trace water 2514-16 ft. Robt. Watchorn O. & G. Co.'s King 1, elev 1660 ft, dr 2705 ft.

SUTTON COUNTY—National Potash Co.'s Rose 1, dr 995 ft.

TAYLOR COUNTY—A. J. Brown Prod. Co.'s Henslee 1-A, elev 2010 ft, fsh 2925 ft. Gilbert Johnson et al's Brown 1, ur 2450 ft.

TERRELL COUNTY—Champlin Ref. Co.'s Carter 1, dr 1345 ft. Deep Rock Oil Co.'s Noelke 1, ur 1015 ft. Humble O. & R. Co.'s University 1, crooked hole 895 ft. Keck-Pecos Trust Co.'s Hamilton 1, dk. Milham Corp.'s Bassett 1, ccl cas 2409 ft. Miller Bros. et al's Ailison-Murke 1, rig. Wooley-Jones et al's Parkenham 1, rig.

TERRY COUNTY—King Pet. Co.'s Brownfield 1, fsh 3360 ft.

UPTON COUNTY—The Texas Co.'s Cordeva 1, sd 3201 ft. Curtis-Hults et al's Giddings 2, sd 975 ft.

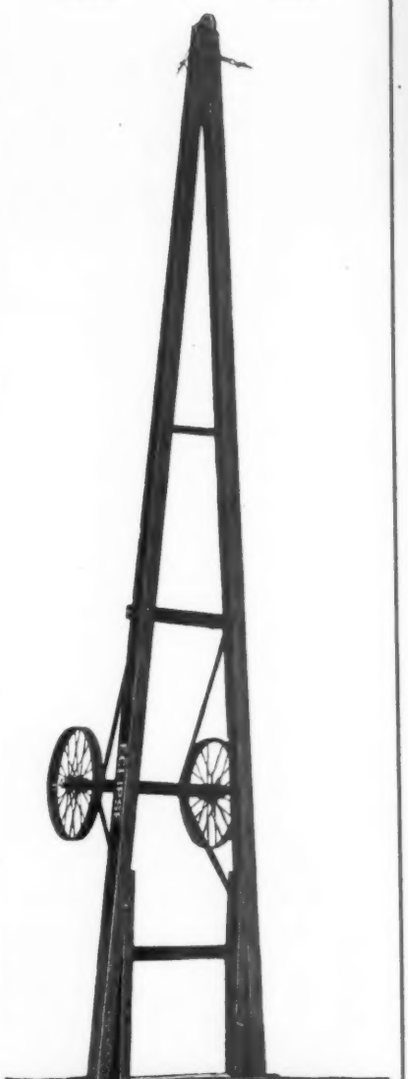
VAL VERDE COUNTY — Magnolia Pet. Co.'s Whitehead 1, dr 6235 ft. O. O. Owens et al's Mills 1, sd 4210 ft. W. B. Thraves et al's Wilson 1, sd 905 ft.

WARD COUNTY—E. H. Devore et al's Black 1, spd and sd. Al del Cambre et al's Monroe 1, spd and sd. Selby O. & G. Co. et al's Dooley-Rogers 1, sd 500 ft.

WINKLER COUNTY—Amerada Pet. Corp.'s Walton 1, elev 2833 ft, sd making 15 million ft gas 2441 ft. Arizona Mining & Engineering Co.'s Hendrick 1, dr 760 ft. Atlantic & Collett-O'Keefe 1-F, elev 2884 ft, top lime 2436 ft, killed gas to drill in, td 2735 ft. V. T. Bolin & Co. et al's Brown 1, sd 260 ft. Cranfill-Reynolds et al's Hendrick 1-C, trying to kill gas 2730 ft. Danciger O. & R. Co. and Marland Oil Co.'s John Sealy 1, rig. Gibson-Johnson et al's Leck-Daugherty 1, top salt 1500 ft, dr 1815 ft. Independent O. & G. Co.'s Cowden-McCabe 1, stdz 2285 ft. Roxana & Llano Oil Co.'s Scarborough 2, elev 2932 ft, top salt 1120

SPECIAL 7x10x36 Ft. Timber

STANDARD 6x10x36 Ft. Timber



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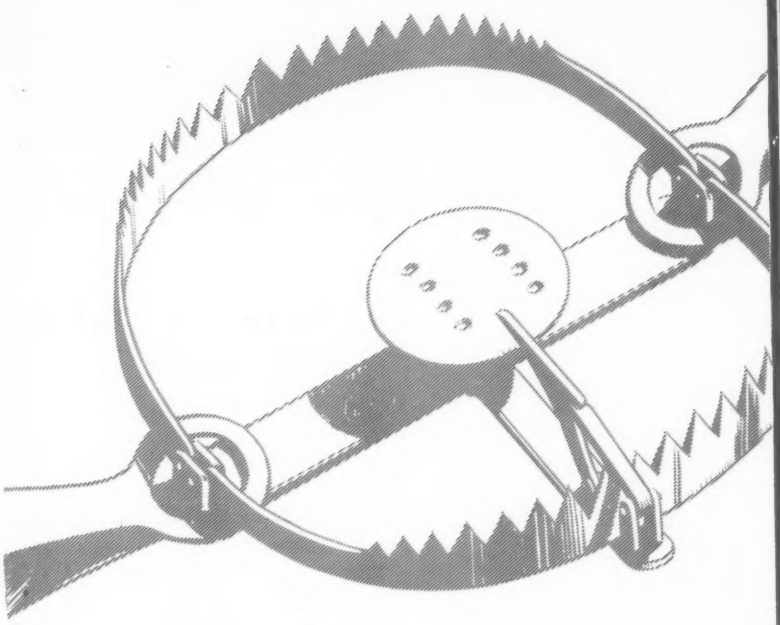

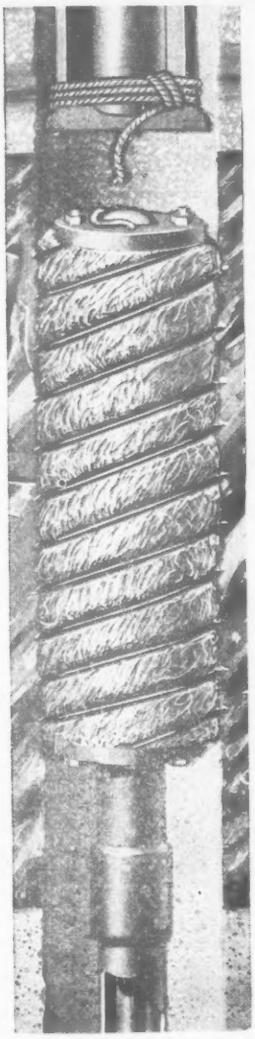

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The GUIBERSON Spiral Bottom Water Plug will positively hold against the heaviest gas pressures. Its spirals of boiler plate steel expand in diameter when compressed, biting into the walls and taking an unbreakable hold.

Oakum is used for packing. The process of setting compresses the oakum uniformly between the steel spirals, forming a non-porous, water and gas tight seal which will outlast the well. Fully patented.

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GAIN in more work from workers who appreciate working on a dry floor.

WRITE TODAY for complete information.

"GRAY for Fine Tools"

GRAY TOOL COMPANY

HOUSTON, TEXAS.

ft, dr 2210 ft. Sheldon & Burden's Hendrick 1, elev 2806 ft, top lime 2610 ft, co after third shot, td 3243 ft. Southern Crude & R. A. Westbrook's E. G. Hutchings 1-T-90, (Sec. 47) making gas, dr 2575 ft. White Eagle O. & R. Co.'s Leck-Collins 1, re-set cas 3260 ft.

TEXAS
GULF COAST

Company, Well and Location	Initial Production Bbls.	Depth
COLORADO COUNTY—		
Carl Milentz, Auerbach 1, near Glidden	*	580
HARRIS COUNTY—		
Humble, Tex-Ex Warren 1, Hockley	*	410
LIBERTY COUNTY—		
The Texas Co., Green 1, S. Liberty	1700	2290
Havard 1, Davis Hill	*	5160
MATAGORDA COUNTY—		
Gulf, Sanborn 4, Hawkinsville	*	....

AUSTIN COUNTY — Humble's Wilson 1, Raccoon Bend, dr 2482 ft, shale; Grawunder 1, Raccoon Bend, dr 230 ft, blue shale. Alexander & Lyles' Goebel 1, Raccoon Bend, dr 2625 ft, shale. L. H. Weadock's Ward 1, dr 1145 ft, gbo.

BRAZORIA COUNTY — Roxana's Allen Bernard 1, Allen Dome, pumping around 15 bbls. a day; Allen 4, Allen Dome, producing 30 bbls a day. Randon 1, Allen Dome, td 4930 ft; Bell 2, Clemens Dome, dr 5880 ft, shale and lime. Gulf's Perry 3, Stratton Ridge, dr. Stanfield & Myers' McNeil 1, Hinckle Ferry, dr 935 ft, gbo. Rucke et al's Muldoon 2, Slop Bowl, td 1025 ft.

CHAMBERS COUNTY—Pure's Lost River 1, Lost Lake Dome, dr below 3575 ft, shale; Old River 1, Lost Lake Dome, dk; Trinity River 1, Lost Lake Dome, dk; Little Lost Lake 1, Lost Lake Dome, dk; Lost River Lake 1, Lost Lake Dome, dk; Cut-Off Bayou 1, Lost Lake Dome, lcn. R. L. Bartlett's Fisher 1, Barbara Hill, dr 2160 ft.

COLORADO COUNTY — Rich Oil Corp.'s Von Rosenberg 1, 2½ mi ne of Columbus, standing, hard rock at 1066 ft. Johnson Bros.' Breeding 1, ne of Sheridan, r 1845 ft. Carl Milentz's Auerbach 1, near Glidden, abn 580 ft. Waldvogel et al's Tanner 2, 3 mi s of Glidden, lcn.

FORT BEND COUNTY — Sun Oil Co.'s Kasparek 2, Boling, dr 1440 ft, gbo.; J. R. Farmer 5, Boling, dr 3425 ft, sand; J. R. Farmer 6, Boling, dr 960 ft; J. R. Farmer 7, Boling, dr 820 ft; H. R. Farmer 5, Boling, temp abn at 650 ft; H. R. Farmer 6, Boling, dr 650 ft lime; H. R. Farmer 7, Boling, dr 1290 ft; E. C. Farmer 1, Boling, standing. Gulf's Wolf 7, Long Point, dr; J. M. Moore 15, Moore's Field, dr 1360 ft. Humble's Sugarland Industries 1, Sugarland, dr 3033 ft, sand and shale.

HARRIS COUNTY — Dr. P. S. Griffith's Fee 1, 8 mi nw Houston, dr gbo 480 ft. Juanita Oil Co.'s Kitsman 1, 3 mi n of Cypress, dr below 1311 ft. Humble-Marland's Warren 2, Hockley, dr 4295 ft, shale and lime; Tex-Ex-Warren 1, Hockley, abn 410 ft after striking cap rock at 400 ft; Tex-Ex Warren 2, Hockley, lcn.

JEFFERSON COUNTY — Deep Test Oil Co.'s McFaddin 1, 4 mi ne of Spindle Top, sd 2175 ft. Gulf's Bordages 4, Fannette, dr 4900 ft. Southern Spindle Top Oil & Dev. Co.'s Young 1, 1 mi w Nederland, sd 3350 ft. Jim McMurry's Crosby 2, 5 mi ne Port Arthur, dr 2850 ft, gbo. Port Arthur O. & Dev. Co.'s West 4, Westbury, sd 3500 ft, gbo. Hinds Oil Co.'s Parker 3, ne side of Spindle Top, dr 2750 ft, sand and shale. Traders Oil Co.'s Cissell 1, dr 3235 ft, shale and lime.

LIBERTY COUNTY — Harrison Oil Co.'s Quintette 2, N. Dayton, temp abn. The Texas Co.'s Havard 1, Davis Hill, abn at 5160 ft. Green 1, S. Liberty, completed for 1700 bbls of 24.8 corrected gravity oil through 5/8-in choke, pipe line production; Staiti 8, S. Liberty, dr 1950 ft, gbo. Yount-Lee Oil Co.'s Mitchell 2, South Liberty, td 4000 ft. Sun Oil Co.'s Mitchell1, South Liberty, dr 3265 ft shale and sand. Barlow et al's Minchcliff 1, 2½ mi ne Cleveland, sd 2215 ft.

MATAGORDA COUNTY—Gulf's Sanborn 4, Hawkinsville, abn; Sanborn 5, Hawkinsville, dr 1060 ft, gyp. Matagorda County Dev. Co.'s Hawkins 1, Bay City, sd 1985 t, shale. Rycade's Hudson 1, dr 1735 ft, shale.

WHARTON COUNTY—Rich Oil Corp.'s

Eastern Scores Again

Shoots well 6235 feet deep.

A few months ago we shot for Roxana Petroleum Corp. the deepest well that ever had been shot up to that time, depth 6165 feet.

January 18 we broke this record by successfully shooting for Wentz Oil Division the deepest well ever shot, Williams No. 1, in Logan County, Okla., at the record depth of 6235 feet.

Both of these wells were shot by W. F. Knode, EASTERN EXPERT.

THE EASTERN TORPEDO OF OHIO CO.

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The Tret-O-litE method is the fast, economical and THOROUGH method of recovering oil from emulsions.

WM. S. BARNICKEL & COMPANY

St. Louis, Mo.

Tret-O-litE

Lee-Clipson 1, ½ mi sw of Lissie, drilled sandy shale, lignite and iron pyrites at 1539-1546 ft.

SOUTH LOUISIANA

Company, Well and Location	Initial Production Bbls.	Depth
CAMERON PARISH—		
La. Land & Explo. Co., Calcasieu Lake A-1	*	2975
IBERVILLE PARISH—		
Union Sulphur Co., Schwing 1, Bayou Blue dome	*	2850

ASCENSION PARISH — Gulf's United Lands Co. 4, Sorrento Dome, flowing 2000 bbls a day through ¾-in choke; No. 5, dr 1100 ft.

CALCASIEU PARISH—Union Sulphur Co.'s Fee 722, Sulphur Dome, dr 3075 ft, shale; Fee 723, dk; Fee 724, dr 1110 ft, gravel. Newton Drlg. Co.'s Dupre 1, Lake Charles, coring sand and lime at 3750 ft.

CAMERON PARISH—Pure's Sweet Lake 2, Sweet Lake, waiting on orders; Sweet Lake 3, Sweet Lake, cleaning out; Sweet Lake 4, Sweet Lake, flowing 1100 bbls a day; Sweet Lake 5, Sweet Lake, flowing 500 bbls daily. La. Land & Explo. Co.'s Calcasieu Lake A-1, abn 2975 ft; Calcasieu Lake B-1, Kelso Bayou district, moving in material. Calcasieu Oil Co.'s Watkins 1, Kelso Bayou, flowing 1200 to 1500 bbls daily; Watkins 2, Kelso Bayou, dr 3578 ft, sand and rock; Watkins 3, Kelso Bayou, ru; Doiron 1, Kelso Bayou, dr 3856 ft, gbo. Noble et al's Ellender 1, Hackberry, reaming 3700 ft. Yount-Lee Oil Co.'s School Land 7, Hackberry, dr 5010 ft, sand and shale; State Land 6, Kelso Bayou, dr 3250 ft; State Land 7, Hackberry, dr 3215 ft, rock; State Land 8, lcn.

IBERIA PARISH — La. Land & Explo. Co.'s Avery 1, Avery Island, dr 4230 ft, water, sand. Gulf's State Z-4, Loreauville, dr. Jefferson Oil & Dev. Co.'s Jeff Island Salt Co. 2, dr 3915 ft, water, sand.

IBERVILLE PARISH—Roxana's Wilbert 1, White Castle Dome, coring 1745 ft. Union Sulphur Co.'s Wilbert 1, Bayou de Glaise Dome, dr 2860 ft, gbo; Schwing 1, Bayou Blue Dome, abn 2850 ft.

JEFF DAVIS PARISH—Estropal Oil Co.'s LeDoux 2, sd, rock, 2980 ft.

LA FOURCHE PARISH—Gulf's Mrs. Stark et al's 2, Thibodaux, dr.

ST. MARTIN'S PARISH—Rycade's Atchafalaya 2, dr 2800 ft, sand.

ST. MARY PARISH—Jacob Dannenbaum's Vimerie 1, Grand Lake, lcn.

TERREBONNE PARISH — Southern Gas Co.'s South Down 4, dr 1390 ft.

SOUTHWEST TEXAS

Completions

DALE FIELD—		
The Texas Co., Lackey 6	80	2190
DUVAL COUNTY—		
R. Driscoll, Fee 10, sec 448	¶25	2480
Humble, Walsh 7, sec 185	*	4508
JIM HOGG COUNTY—		
Magnolia, Merchants State Bank 34, sec 415	10	1250
WEBB COUNTY—		
Houston Oil Co., Bruni 3A, blk 47, sec 10	¶40	2350

CALDWELL COUNTY—Dr. Bute's Boyd 1, sd 2375 ft. Radcliff et al's Briscoe 1, ne Luling, standing. Hertz & Hinton's Parr 1, td 1415 ft. Joe Bruner et al's Wilson 1, td 40 ft; United North & South's Kelly 1, dr 7498 ft; Tiller 2, dr 7071 ft.

DUVAL COUNTY—Humble's Walsh 7, abn in salt water at 4508 ft. R. Driscoll's Fee 9, sec 23, set cas at 2970 ft, after test showed gas and oil. Fee 10, sec 448, completed for ¶25 at 2480 ft. National Oil Co.'s Ball 1, dr 1078 ft.

HIDALGO COUNTY—Dale Smith's Daskan 1, td 3235 ft.

JIM HOGG COUNTY—Miller Shaw's Jones 1, sec 381, dr 1865 ft. St. Alban's Lopez 9, td 2145 ft.

SAN PATRICIO COUNTY — Pardee Pet. Co.'s Bell 1, 4 mi south Mathis, sd 2850 ft. Leach et al's Collins 2, nw Mathis, will test sand at 2375 ft.

VAL VERDE COUNTY—East Del Rio's Weatherbee 1, sd 3200 ft. Thraves et al's Wilson 1, dr 910 ft.

WEBB COUNTY—J. H. Winch's Gates 1, sec 70, dr 2360 ft. Cole Pet. Co.'s 52, in blk 5, sec 412, set casing at 2322 ft, after Halliburton tester showed gas and oil.

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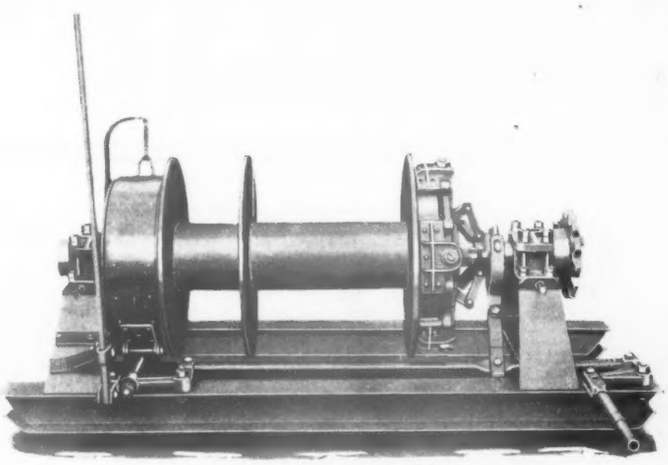

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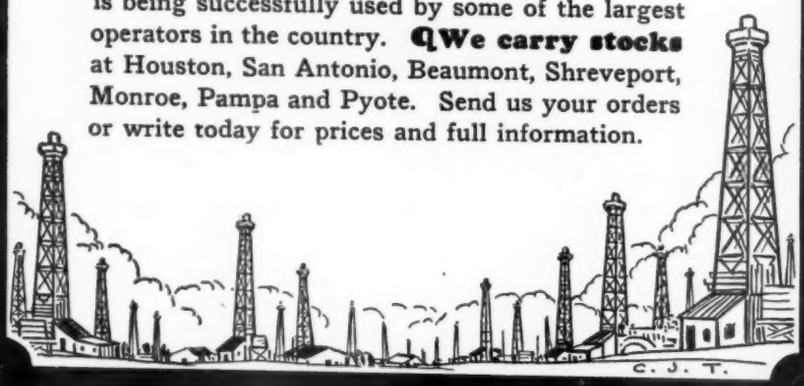

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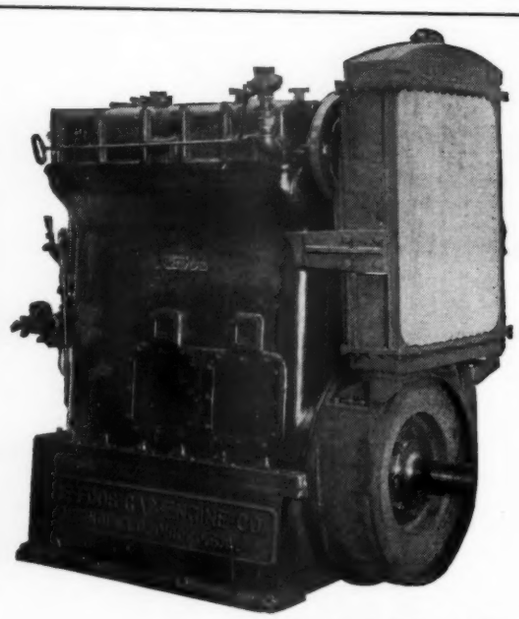

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California Stock Report Helps Curtailment Program

(Continued from page 59)

completed a good well on section 30-9-32, and incidentally obtained its first production in the district. Both the R. and G. Oil Company and the Palmer Union Oil Company will develop their extensive holdings in and near the field. Total production in the Goleta field has dwindled to about 400 barrels. One well is producing 160 barrels, another 225 barrels, and the remaining production is coming from some very small producers. About a year ago the Goleta field was discovered and heralded as the light oil find of the year. The first well produced satisfactorily for a short time. Operators have never been able to solve the water problem in the field. Layers of water sand are often found at irregular intervals.

Due to several important discoveries during 1927 and the early part of this year, Kern County wildcats are attracting wide attention. Around almost every important field, tests are being drilled with the view of further extending the producing limits of the areas. Several such extensions were made last year. A number of major companies have become interested in the Buttonwillow district, having acquired large blocks of acreage over an area of several square miles. The possibility of a gas line from this region to San Francisco and other northern cities has influenced many operators to obtain acreage. The Edison district is expected to become very active if the General Petroleum Corporation solves the water problem in Kerwin 1, which produced daily about 100 barrels of oil and half as much water during a long test. The Richfield Oil Company recently purchased a heavy interest in about 3000 acres near the General Petroleum well. This company also took over nearly 2000 acres of wildcat leases near Semitropic. Wildcat wells are being drilled near the Mt. Poso, Round Mountain, Kern Front, Sunset and McKittrick fields, in addition to a large number of miscellaneous tests. From a geological standpoint, many of the wells are located on the theory that either extensions of "highs" exist near or between the older fields. The more conservative operators generally are near the proven fields, while the others have boldly thrown the old theories to the wind and are drilling in very remote areas.

Huntington Beach

Following a number of mediocre wells, the J. F. Garliepp interests have completed a 500-barrel producer in the Huntington Beach field. The well was finished at 3695 feet. The oil is only 21.6 gravity, a comparatively low figure for such a depth, but is strictly a pipe line product. Two important deep tests are being drilled in the field, one by the Standard Oil Company and another by J. A. Browers. The Standard's Thompson 8 is nearing the 6000-foot level, with only streaks of gray sand in evidence. The Browers test, which created considerable excitement two months ago by a sensational blowout, has been deepened to 5370 feet. Additional

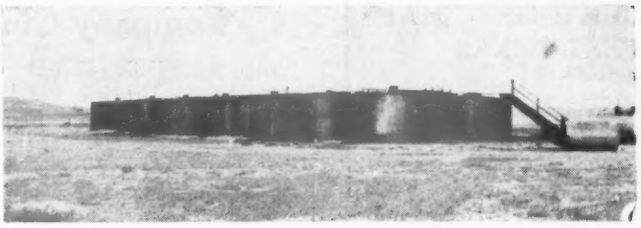
drilling did not improve the situation. Water had been the chief trouble during the original test at 5350 feet, and it now appears that the same problem will prevent a successful test at the new level. The well is near the extreme southeastern part of the field and its success in a deeper sand would mean a slight extension to the present producing limits.

Three average wells were completed during the week in the Kern Front field, which has been especially active for more than a year. George F. Getty's McDougall 4, section 26-27-28, with an initial production of 260 barrels, was the best well of the week. Total depth was 2170 feet, with an eight and one-fourth-inch string on bottom. The oil was 16.3 gravity and cut about 4 per cent. The Associated Oil Company's No. 3, section 23-28-27, was a 200-barrel producer at 2385 feet. The crude was 15.5 gravity and clean. The Associated was one of the latest entries into the field, but has completed several good wells in rapid succession. The General Petroleum Corporation continued its successful development of the Sill lease with the completion of No. 6, section 26-28-27. The well was originally drilled to 2215 feet, but plugged back to 2175 feet for the final test. Initial production was 150 barrels. Possibly in no other field in the State have the completions been so regular or uniform during the past six months as in this area. The average initial production has been slightly above 200 barrels, with no large wells to bolster the average.

The smaller fields of the Los Angeles Basin have few critical tests within their borders to arouse more than passing interest. The Standard Oil Company recently recompleted No. 65 in the Inglewood field with an initial production of 400 barrels. The well was deepened only to 2330 feet and cannot be properly called a deep test. The deepening of old wells in the Dominguez field is only partially successful.

Los Angeles—Through purchase of certain Bobson claims to permits along the beach in the Rincon field, the Wilshire Oil Company is making a bid for entry into the new area. The permits involved are in litigation and the Wilshire Oil Company will actively enter the field in case the Hobson claims are upheld. The land originally belonged to the Hobson family, although permits have been issued for development to others.

Fillmore, Cal.—Leasing near this place has shown a decided increase, following reports that the Keck Syndicate has encountered good oil showings in its test on section 33-4-20. The well is drilling below 4000 feet, a string of 11-inch casing having been cemented at about 3940 feet. The company is coring the present formation but has not made public its findings. Additional acreage is being sought. Representatives of several major operating companies have recently surveyed the country adjoining the Keck lease.



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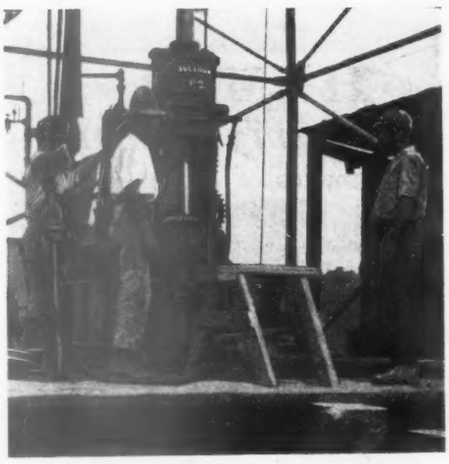
On a well near Tampico, a Sullivan Diamond Drill reached the oil 40 per cent quicker than other rigs in the same locality.

Average cutting for the diamond drill with a 6-inch fish tail bit, in shales, was ten to eighteen feet per hour—but when the lime rock was reached at 1407 feet, the diamond drill left the other rigs behind.

After the 4-inch pipe was cemented into the lime rock, and a 3⅝-inch diamond bit attached, the drill went on down to 1850 feet at 75 feet per day. At this depth, oil pressure slowed up the drill to 30 to 40 feet a day.

In three months, the Sullivan Diamond Drill finished the hole to 2153 feet—while other



rigs still had two months to go. The Diamond Drill cuts hard rock quickly; and cuts the labor and overhead charges of drilling the well. *That's one reason why fifty great oil companies now use them.*

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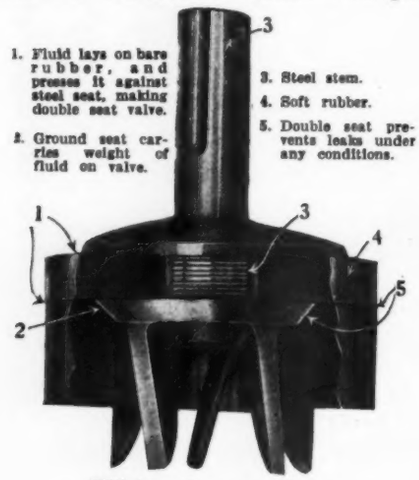
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"Ideco" Employes Form Company Club

Columbus, Ohio.—Employes of the International Derrick and Equipment Company, at the home office here have just organized a club, the purpose of which is to further "Ideco" spirit, promote closer fellowship and foster educational and social efforts by members. The organization meeting took place in the company's offices, January 31.

Plans for assembly rooms to be used by the organization were included in those of the new office building which has just been completed. These rooms, occupying the major portion of the basement, consist of billiard and card rooms, a large auditorium equipped with a moving picture outfit, rest rooms and a kitchen. Meals are not being served at this time, but this feature is planned for the near future.

Two evenings each week will be devoted to educational purposes, and for the present, classes in salesmanship and blue-print reading are to be given. Lecturers and speakers of note have been invited to address the club, and an interesting series of programs consisting of talks and moving pictures of the steel, oil and other industries has been scheduled. In connection with the club, summer camps are to be established, where employes may take their families and spend their vacations near the water at a minimum expense.

Membership of the club is made up of not only Ideco employes in Columbus, but also has a membership throughout the Ideco organization in the Mid-Continent and Gulf Coast oil field branches, New York, and at the Pacific Coast plant at Torrance, California.

The officers and board of governors were elected, as follows: M. A. Keith, Columbus, president; John L. Hamilton, vice-president; L. L. Powell, Dallas, Texas, vice-president for the Mid-Continent district; W. B. Tobin, Torrance, California, vice-president for the Pacific Coast district; C. G. Runkle, treasurer; R. H. Harvey, assistant treasurer; J. B. Anawalt, secretary; Mrs. E. C. Meredith, assistant secretary. Board of Governors: J. B. Anawalt, M. O. Downing, G. P. Dysart, C. E. Firestone, Sr., J. L. Hamilton, R H. Harvey, M. A. Keith, Mrs. E. C. Meredith, L. L. Powell, C. G. Runkle, C. E. Schuler, W. B. Tobin.

Hanford, Cal.—The Bolsa Chica Oil Company is plugging back its Kettleman Hills well on section 30-23-19, and will attempt to obtain production from a zone found near the 2000-foot level. There is a good demand in Kings County for road oil, and the company will place its well on production with a view of satisfying this demand. Several wells are drilling in the Kettleman Hills, but the Bolsa Chica's No. 1 will go on record as the first producer.

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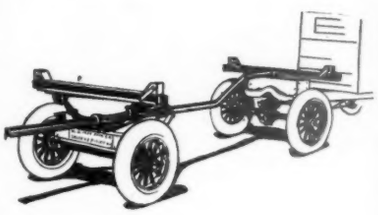

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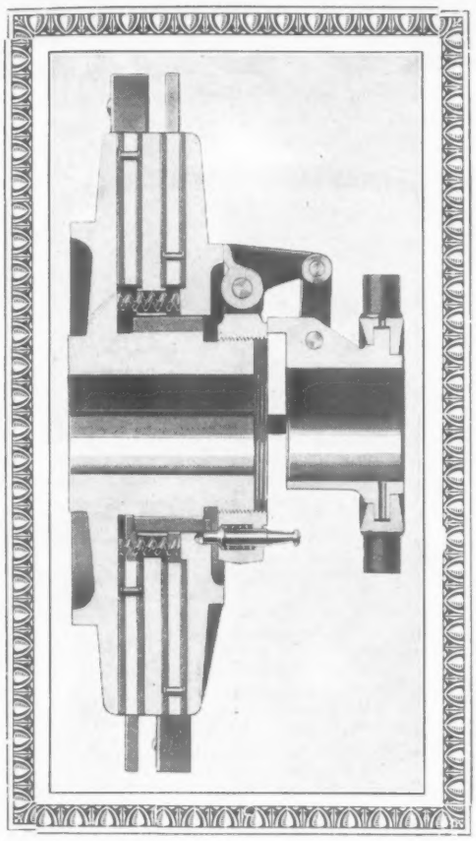

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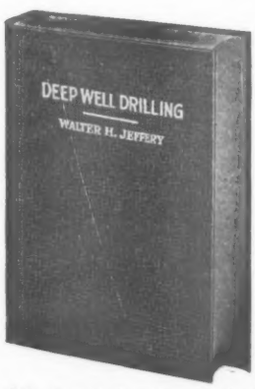

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Purifier for Pipe Lines

ANDREWS-BRADSHAW COMPANY

Andrews-Bradshaw Company, Pittsburgh, Pennsylvania, announces a small purifier for use in several sizes of air, steam or gas lines up to three-inch.

The purifier is especially recommended for use on lines handling saturated steam.

It is claimed that clean air can be obtained for use in air tools by the installation of a Pipe Line Tracyfier in the air line near the tool.

Liquids in gas can be removed by the device, it is also claimed.

The purifier uses the same principles that have been proven successful in the Tracyfier.

Additional information is available from the company by request.

New Starter for Motors

LINCOLN ELECTRIC COMPANY

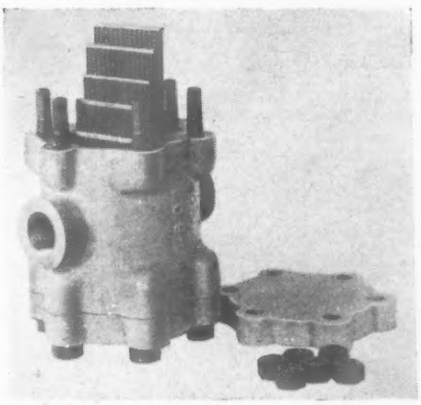
A new automatic induction starter with two adjustable features has just been announced by the Lincoln Electric Company of Cleveland, Ohio. One of the adjustments is in the starting current and starting torque, and is made by changing the position of the rotor in the regulator. This rotor is index mounted and the starting torque and starting current of the motor are increased by going to the higher numbers of the scale and decreased by going to the lower.

The other adjustment is in the current at which the throw-over takes place. The throw-over in this new starter is controlled by retarding solenoid which is operated by the motor current. The pull of this solenoid can be adjusted by a simple lock rod arrangement carried on its plunger.

For mounting purposes the switch may be considered as consisting of three parts: namely, the back cover, the front cover and the switch itself. In mounting, the back cover is first secured to the wall. It is light and can be easily held and attached by one man. As the switch mechanism is detachable from it, it is unnecessary to handle the former while the mounting is being done. The back cover contains conduit outlets, hence the wires may be drawn in very easily before the interior mechanism is set in place. After the leads are drawn the switch may be set into the back cover in such a way that the leads and the terminal blocks to which they are attached will be easily accessible. After all connections have been made, the switch is locked in position by a screw provided for that purpose. The last operation is placing the front cover in position.

With the new Lincoln Automatic Induction Starter, the motor is controlled by the conventional start and stop buttons. When the start button is compressed it applies the correct voltage to the motor and the starting current is held within the desired limits. After the motor comes to speed, the current attained falls off. When it has fallen off to the desired amount, the switch automatically sets itself in the running position without interrupting the torque of the motor. The motor is removed from the line by pushing the stop button.

More details can be had from the company by request.



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CLIMAX ENGINEERING COMPANY

Climax Engineering Company, of Clinton, Iowa, has adapted its large model R6U engine as a generator drive, mounting the engine on cast iron side rails which in turn can be set on a concrete or cast iron sub-base, whereby the generator can be direct connected to the engine through a flexible coupling which is cushioned with rubber, thereby eliminating undue shocks.

The engine can be supplied with or without radiator cooling and with a water cooled exhaust manifold, which is particularly adapted for service where there is exceptionally heavy and long service or where room temperatures are high.

Another feature is the electric starter whereby this large engine can be started simply by the touch of the starter button. It is also equipped with dual ignition, both battery and magneto, insuring reliability at all times.

Further particulars are available on application to the company.

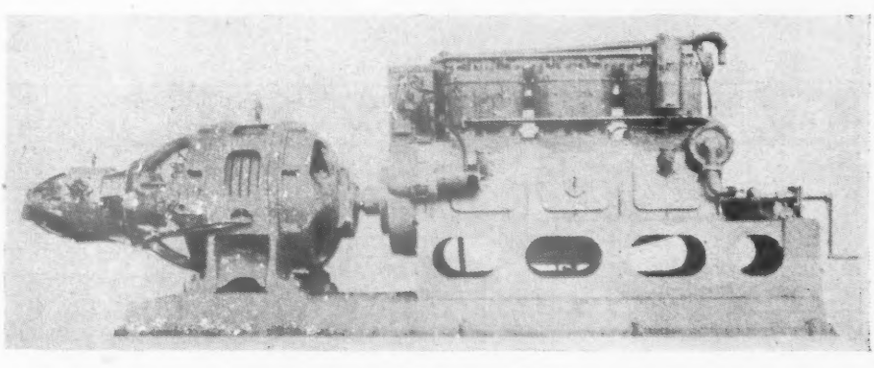
Equipment To Be Shown at Gas Meeting

New York, N. Y.—The exhibition of equipment and appliances to be held in conjunction with the annual convention of the Natural Gas Department of the American Gas Association at Dallas, Texas, May 7 to 10, will be one of the largest if not the largest ever held by the natural gas industry, according to announcement just made by N. C. McGowen, chairman of the department.

Present indications point to a larger exhibition than was held last year at the Cincinnati meeting, when 22,000 square feet of space were used, says Mr. McGowen. Advance inquiries made by manufacturers regarding space in the exhibit reveal the interest being shown.

"All manufacturers of equipment and appliances were especially interested when Dallas was chosen at the meeting place," says Mr. McGowen. "Plant extensions now being made at a record rate in the Southwest will tend to attract the equipment companies, while the intensive building development of the territory is one of the main attractions for the appliance people. It is also expected that manufacturers of industrial equipment will take advantage of the opportunity to exhibit in the center of the Southwest's great natural gas development."

The Exhibition Prospectus has been mailed to manufacturer companies. This prospectus gives the cost of booths, requirements, gas and electricity facilities, and all details. Manufacturers have been requested to place their orders for space promptly, to avoid disappointment.



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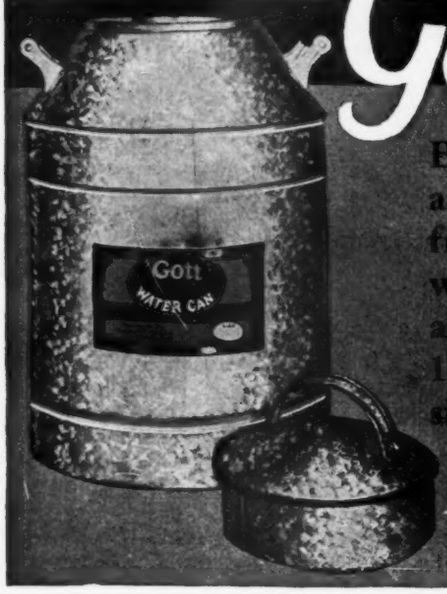

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Bulletin Announcement

Sullivan Machinery Company, 122 S. Michigan Avenue, Chicago, has announced several bulletins on different items of equipment, of interest to oil operators.

"Speed Up With Air," booklet No. 134, shows many different applications of portable air compressors and compressed air tools and processes.

Bulletin 83-1 describes single-stage, belt-driven, horizontal compressors, and shows many installations of these compressors.

Sullivan six and one-half horsepower, portable, electric motor driven hoists, both single and double rum, are described and illustrated in Bulletin 76-G.

The new Sullivan drill steel furnace, type GF-2, portable, is treated in Bulletin 74-C. The furnace has a capacity of 13 1¼-inch bits, or 10 2-inch bits on the hearth. It burns either fuel oil or gas.

For shop, power plant and miscellaneous industrial requirements in which a relatively small amount of compressed air is needed, and where compactness is essential, Sullivan vertical air compressors, two and four-cylinder types, are recommended. These are described in Bulletin 83-H.

Copies of any or all of these bulletins can be obtained by request from the company.

Catalog Announcement

Publication of the 1928-1930 catalog of Electrical Supplies of the Westinghouse Electric and Manufacturing Company has just been announced. This catalog presents the electrical and mechanical features and application information for all supply apparatus and appliances manufactured by the Westinghouse Company, and in addition describes and illustrates a representative list of large motor and generating apparatus.

Copies can be obtained from the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania.

Heydrick Moves Offices

Fort Worth.—Heydrick Mapping Company, formerly of Wichita Falls, has recently opened a new office here at 609 Petroleum Building.

Heydrick is among the best known mapping concerns in the Mid-Continent.

All the new maps sold by the company are drawn from land office records and plats after railroad and highways have been plotted.

Heydrick maps match each other, and this cuts down the danger of accumulative error.

The company will send complete literature and sketches covering the maps offered.

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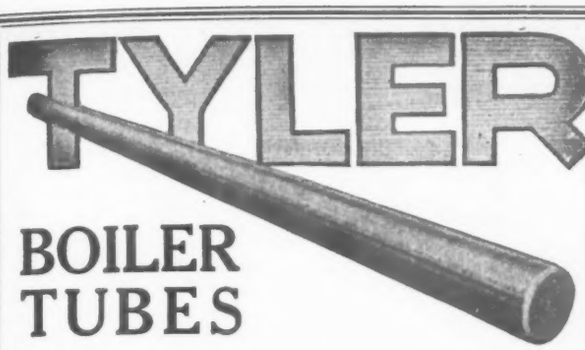

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Ever increasing recognition is being given to the value of concentration upon the specialized task. This organization has always concentrated its efforts on one objective: to make the finest products of its line. Research has not been spared in the endeavor to obtain the best materials, to improve the design, to make the resultant products better. The buyer knows that he can depend on Wickwire.

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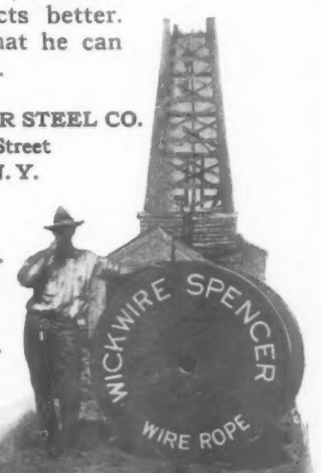

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If the NO-CO-RO Drop & Seat *doesn't* give you twice the service of the best ball and seat you have ever used, we will refund the purchase price. If it *does* give you twice the service, you effect a permanent and substantial saving in pulling costs.

In either case you are ahead. We can think of no fairer way of suggesting a trial of the NO-CO-RO Drop & Seat; and realizing some of the savings that users have reported to us—eight months' service in a well once pulled every week, to cite one example—we know of no improvement you can make that will return such rich rewards.

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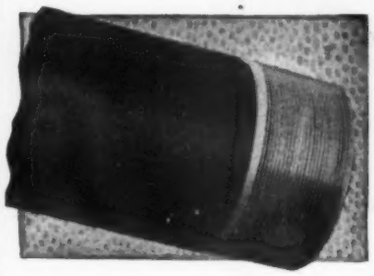

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SQUEAKS FROM THE BULL WHEEL

No girl has any business in a parked auto in a dark lane—its a pleasure.

"How can I drive a nail without hitting my fingers?"

"Hold the hammer with both hands."

A foreman in the Seminole field was addressing a safety first meeting, and in outlining the procedure in case of a tank or rig burning, he said, "above all things if your clothing catches on fire keep cool."—Between Calls.

Lots of Room

Last fall a pipe line company found it necessary to move some men from Louisiana to West Texas to hurry the completion of a line. The pipe liners were unloaded at a small station west of San Angelo one morning and met by the foreman, who was greeted by one of the men with,

"Say, Boss, when you hires us I understands we gets room and board. I sees lots of room round here, but where's the board?"—Between Calls.

The telephone operator was spending the summer holidays by the bounding sea. On the first morning, however, she had occasion to berate the maid of the lodgings for real or imagined negligence.

"Why didn't you call me as I told you this morning?" she demanded.

"I did, miss," replied the maid, with an injured air. "I called out 'Seven-thirty,' and all you said was 'Line's busy'."

A very fat man was seated in a street car taking up half the room of the very thin man next to him.

"I think the street car people ought to charge by weight," exclaimed the thin man, petulantly.

"Indeed," replied the portly one. "Then in that case they wouldn't stop to pick you up."—Exchange.

"Are you a college man?"

"No. I'm wearing these clothes to pay an election bet."

Aunt 'Liza's former mistress was talking to her one morning when suddenly she discovered a little pickaninny standing shyly behind his mother's skirts.

"Is that your little boy, Aunt 'Liza?"

"Yes, miss, dat's Prescription."

"Godness. What a funny name, Auntie, for a child. How in the world did you happen to call him that?"

"Ah simply calls him dat because Ah has such hard work getting him filled."

So you've really been practicing since 1895?

Dentist—If you don't believe it, just look over the magazines in the waiting room.

He was a terribly "short" man, but he knew a real live business woman when he saw her. She was applying for a situation as confidential clerk and typist, and he turned upon her a rapid fire of questions.

"Talk slang?"

"No, sir."

"Know how to spell 'cat' and 'dog' correctly?"

"Yes, sir."

"Use the telephone every other minute?"

"No, sir."

He was thinking of something else to ask her when she took a hand in the matter and put a few queries.

"Smoke cigars when you're dictating?"

"Why—er—no," he gasped in astonishment.

"Slam things about when business is bad?"

"No."

"Think you know enough about grammar and punctuation to appreciate a good typist when you get one?"

"I think so."

"Want me to go to work, or is your time worth so little that—"

He interrupted her enthusiastically by saying:

"Kindly hang up your things and let's get at these letters."

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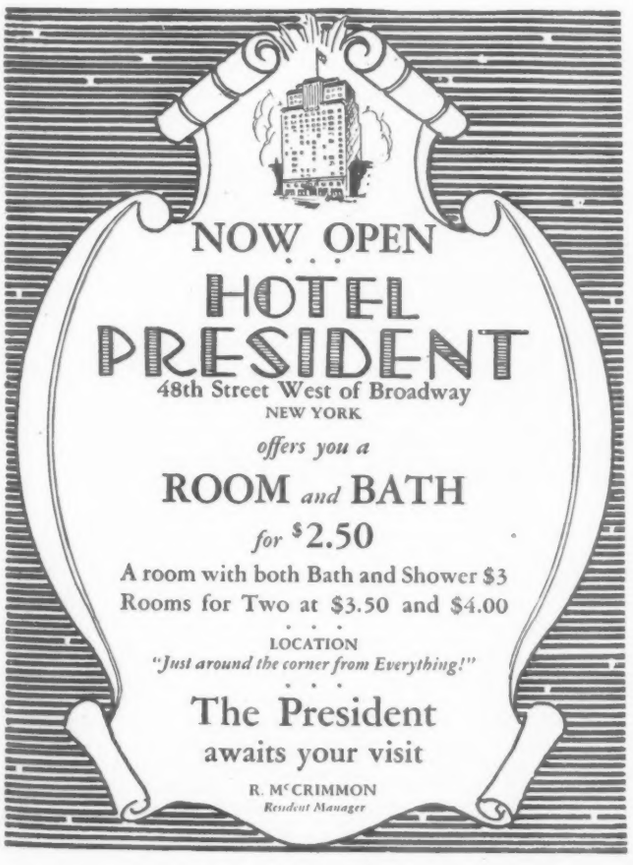

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